

■ SENEGAL

**The Diallowali Site Complex:  
A Late Stone Age Occupation  
along the Middle Senegal  
Valley**

Coutros, Peter R.  
Department of Anthropology  
Yale University  
New Haven Connecticut, USA

**Introduction**

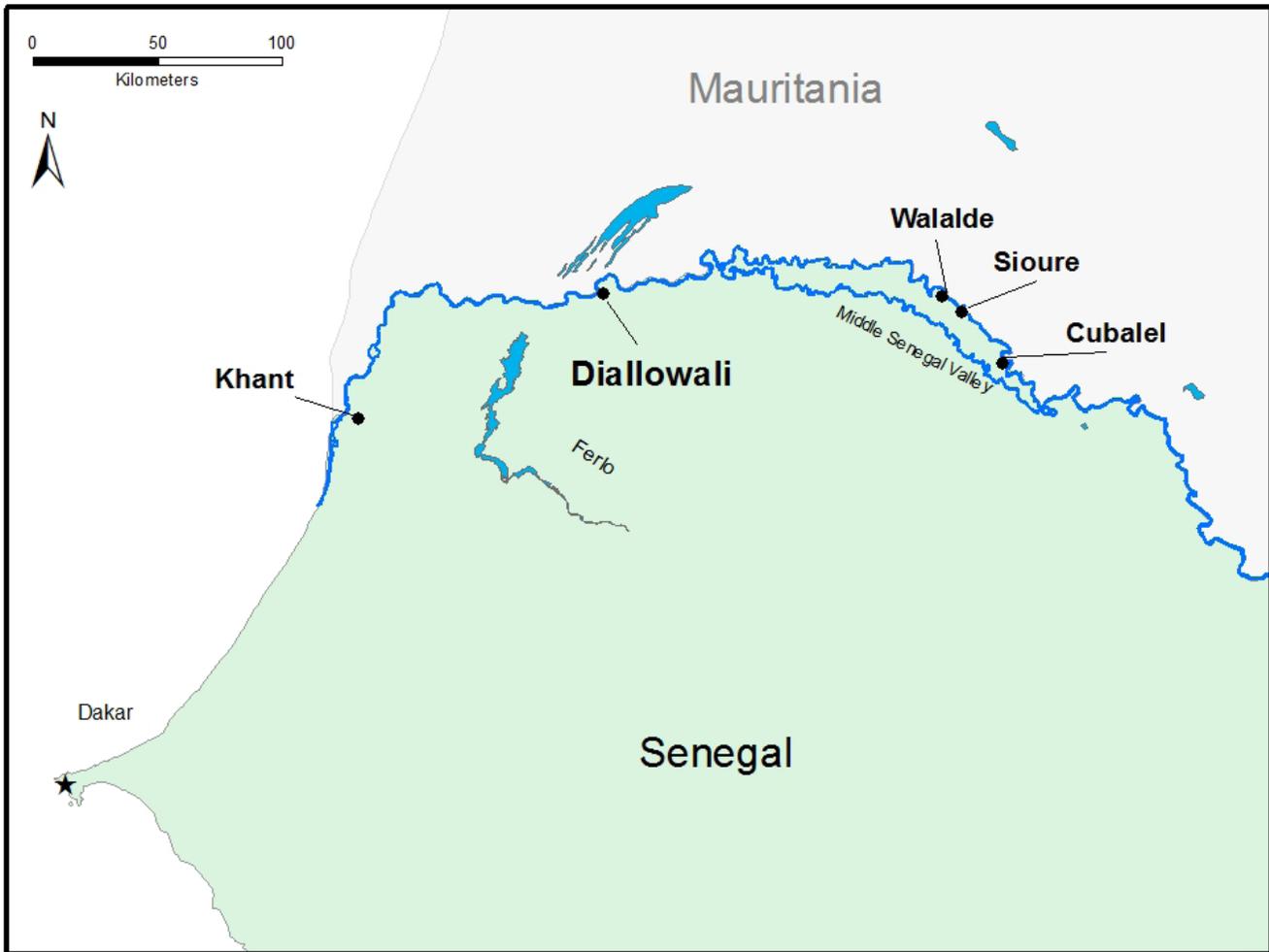
River systems have long functioned as focal points for human communities, and have thus been of special interest to archaeologists in almost all regions of the world. River valleys in arid and semi-arid landscapes are of particular interest, as they would have provided consistent access to water required for a range of past human activities in an otherwise inhospitable landscape (McIntosh 1999). On the margins of the semi-arid region of the western Sahel, the Middle Senegal Valley (MSV) has played an integral role in supporting populations since at least the second millennium BC. Prehistoric communities settled along the river and exploited the rich natural resources the MSV provided, including wood fuel, aquatic and terrestrial game, wild grasses and fruits, and, eventually the secure source of water needed for agriculture. The Diallowali Site Complex sits in a particularly advantageous location, situated along the Senegal River between two lake systems (Lake Rkiz and Lac de Guiers to the north and south respectively).

A diverse range of groups sought refuge in the MSV during the periods of heightened aridity that began to take hold of the Sahara around 4000BP. The

drying of the northern interdunal lakes and stream systems, and the resulting disappearance of vegetation, made agriculture impossible and pastoralism increasingly difficult in the higher latitudes (McIntosh *et al.* 2016: 614). The populations that arrived between 3000 to 2500 BP were iron-using, agro-pastoralists growing millet, raising cattle, hunting, and fishing. Beyond this, however, little is known about these communities, and almost nothing is known about the initial occupants of the region. The scarcity of systematic archaeological research along the MSV has prevented some of the most basic questions from being answered. Compounding this is the fact that much of the previous research in the region was not designed nor conducted in a manner in which deep-time processes of social, economic or political change could be addressed.

More recent work along the Île à Morfil at Cubalel and Sioure (McIntosh *et al.* 2016) and Walalde (Deme 2004), and further upriver at Arondo (Thiaw 1999), and Diouboye (Dueppen and Gokee 2014), is increasing the number of comparable data sets on the subsistence patterns, technological innovations, and social organizations of the communities along the Senegal River since the first millennium BC. Significant headway is being made in these areas; however, many gaps in our understanding still remain. Much of the work along the river has generally focused on the regions around the central MSV or further upriver. The closest radiometrically dated ceramic sequence to Diallowali, for instance, is approximately 140km away at Walalde, presenting obvious problems when attempting to compare potentially related archaeological phenomena (Figure 1).

The Diallowali site complex consists of a series of 14 mounds clustered among numerous specialized activity and seasonal occupation sites. The density and size of sites places the Diallowali site complex in a unique category of sites dating to the first millennium BC. Despite the importance of the site complex, previous work at Diallowali has been both episodic and inconsistent in quality. Beyond occasional surface collections, R. Reeves directed the only systematic investigation of Diallowali in 1977. These excavations targeted two mounds, yielding



**Figure 1:** Regional map.

400kg of ceramics, 40 beads made of ostrich egg, ceramic and quartz, as well as "hundreds" of animal bones and the remains of a poorly preserved infant cranium (Chavane 1985: 65). Unfortunately, the results from this project were never published, and the material subsequently lost. Thus, the current research project commenced with very little information from which to build upon.

Since 2012, the Diallowali Archaeological Research Expedition (DARE) has engaged in a multi-phase project designed to investigate the cultural and palaeoenvironmental changes along the western MSV over the past 3000 years. The research team has adopted an explicitly diachronic approach, in order to examine long-term processes of

human-environment interaction. The DARE project is a joint initiative between Yale University and of l'Institut Fondamental d'Afrique Noire, Université Cheikh Anta Diop de Dakar (IFAN/UCAD), and is composed of several graduate and undergraduate students from each institution.

In order to accomplish the stated objectives, the project team developed a three-phase methodology, consisting of: 1) stratigraphic excavations, 2) systematic pedestrian survey, and 3) geophysical prospecting. This article presents the initial results of the first phase of the DARE project, involving excavations conducted between December 2013 and March 2014.

## Excavations

Three units were excavated at the site complex, targeting the central mound, and two low-elevation areas between the mounds (Figure 2). All soil from each pass was sifted through a 0.5mm screen, from which artifacts were collected and sorted into respective bags. The main excavation unit (5mx2.5m) revealed a deeply stratified habitation mound approximately 3.85m in depth, excavated into 30 natural levels. Several habitation contexts were encountered in Unit 1, revealing a combination of unfired brick and daga (a pole-and-daub variant) architecture, and numerous hearths containing charred animal bone (Figure 3). The unexpected density of the stratigraphy suggested an intense, long-term occupation of the site.

Test Unit 1 (1mx1m) and Test Unit 2 (1mx2m) reached sterile soil at 1.4m and 1.5m respectively. These test units were placed in the low-elevation areas between the mounds in order to better understand the organization of the site complex. As the ceramic scatters are mainly restricted to the surfaces of the elevated tells, it was unclear if this represented distinct zones of activity, or if the site extended below the surface. Although the stratigraphy of these units was less dense, large amounts of material were recovered and numerous features were encountered. The results of the test units suggest that, in fact, the occupations extended over the entirety of the site area for at least a portion of the occupation period.

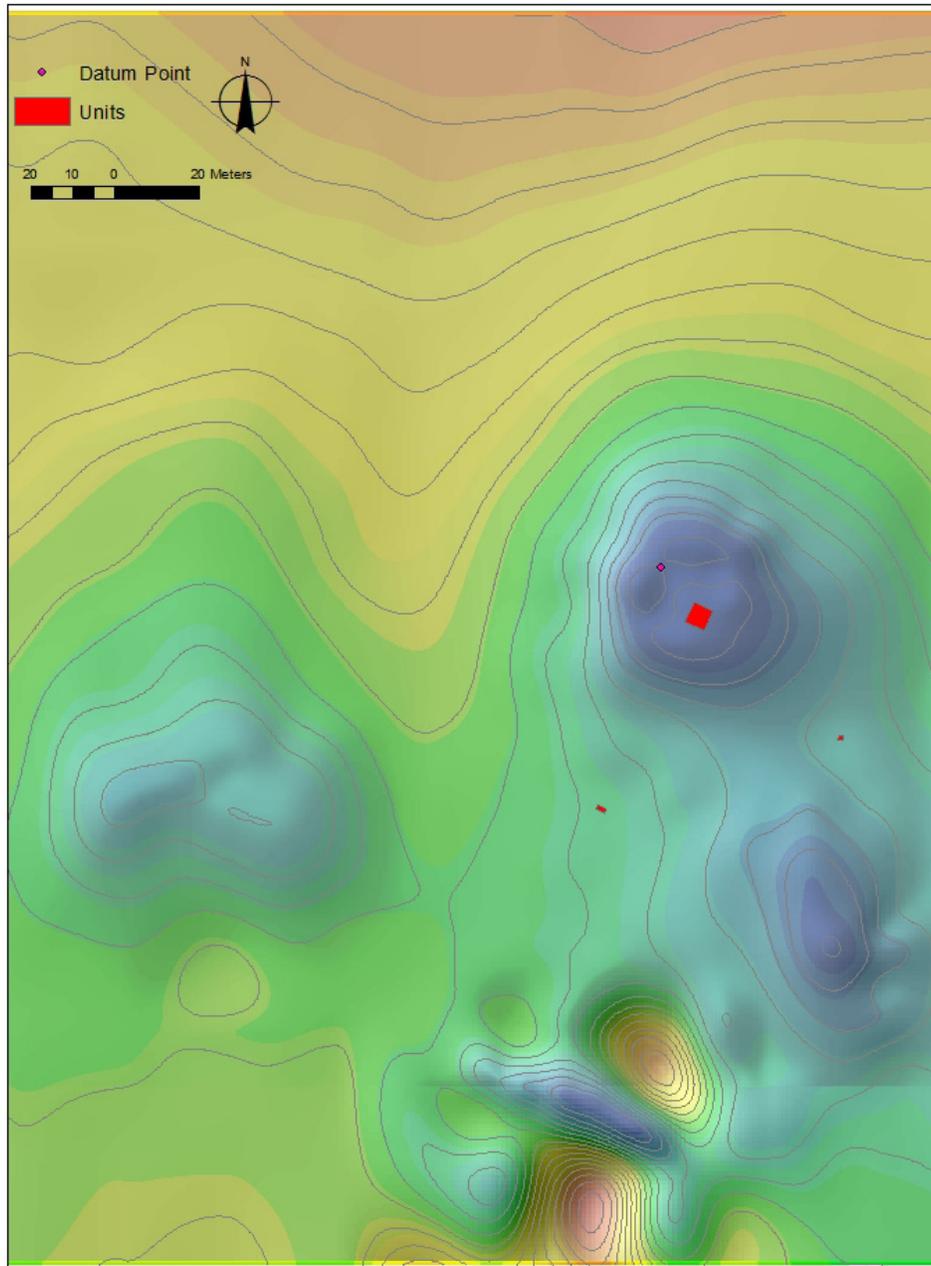
Excavations of the three units produced a combined 4000kg of ceramics and almost 175kg of faunal material. In addition, marine shell, red and yellow ocher, river shell, and bone tools were also recovered in large quantities. Dozens of beads made of ceramic, bone, marine and ostrich egg shell, and semi-precious stones were found throughout the units. Interestingly, no evidence for iron technology and very few stone tools were encountered during the excavations. Instead, bone tools were found in large numbers; consisting of harpoons and projectile points, and fishhook fragments. Although there is no evidence for iron, several small pieces of copper were recovered during excavations.

The preliminary analysis of the recovered material, in conjunction with site stratigraphy and topographic mapping, reveals an intense, long-term occupation of the site complex. Carbon samples produced dates of cal. 1014-845 and 786-490BC (Lab. No. AA105281, AA105279), taken from levels 28 and 4 respectively. As these levels do not represent the extremes of the sequence, it is estimated that the true occupation range extends between approximately 1100 and 300BC. Several other factors, including ceramic materials and existing palaeoenvironmental chronologies, support this general range. This makes the Diallowali site complex one of only a very few number of sites dating to the first millennium BC to be systematically investigated.

## Finds

In total, 49952 sherds, and innumerable sherd fragments weighing almost 4000kg were recovered from the three units excavated. Pottery fragments smaller than 4cm<sup>2</sup> were determined to be too small to provide sufficient data, and were thus collected, weighed and discarded. No full vessels were recovered from the excavation, surprising only in light of several 'ceramic concentrations' (mainly bottle caches) encountered during excavations. Due to the large quantity of material, the analysis was separated into two major stages: 'In Field' and 'In Lab' analysis. In field analysis was conducted, both on site and at the project house in Dagana, by the entire field team. In Lab analysis was conducted between January and March 2014 at the Archaeology Laboratory of IFAN/UCAD by the author.

Although the physical analysis of the ceramic material has been completed, further statistical work remains to be performed. The final results will be presented in future publications after all of the data has been compiled and changes in decor and form preferences over time can be quantitatively evaluated. However, the preliminary results suggest that the Diallowali assemblage is quite unique, and differs greatly from known ceramic traditions in neighboring regions. Most evident is the wide range of



**Figure 2:** Central mound cluster at Diallowali.

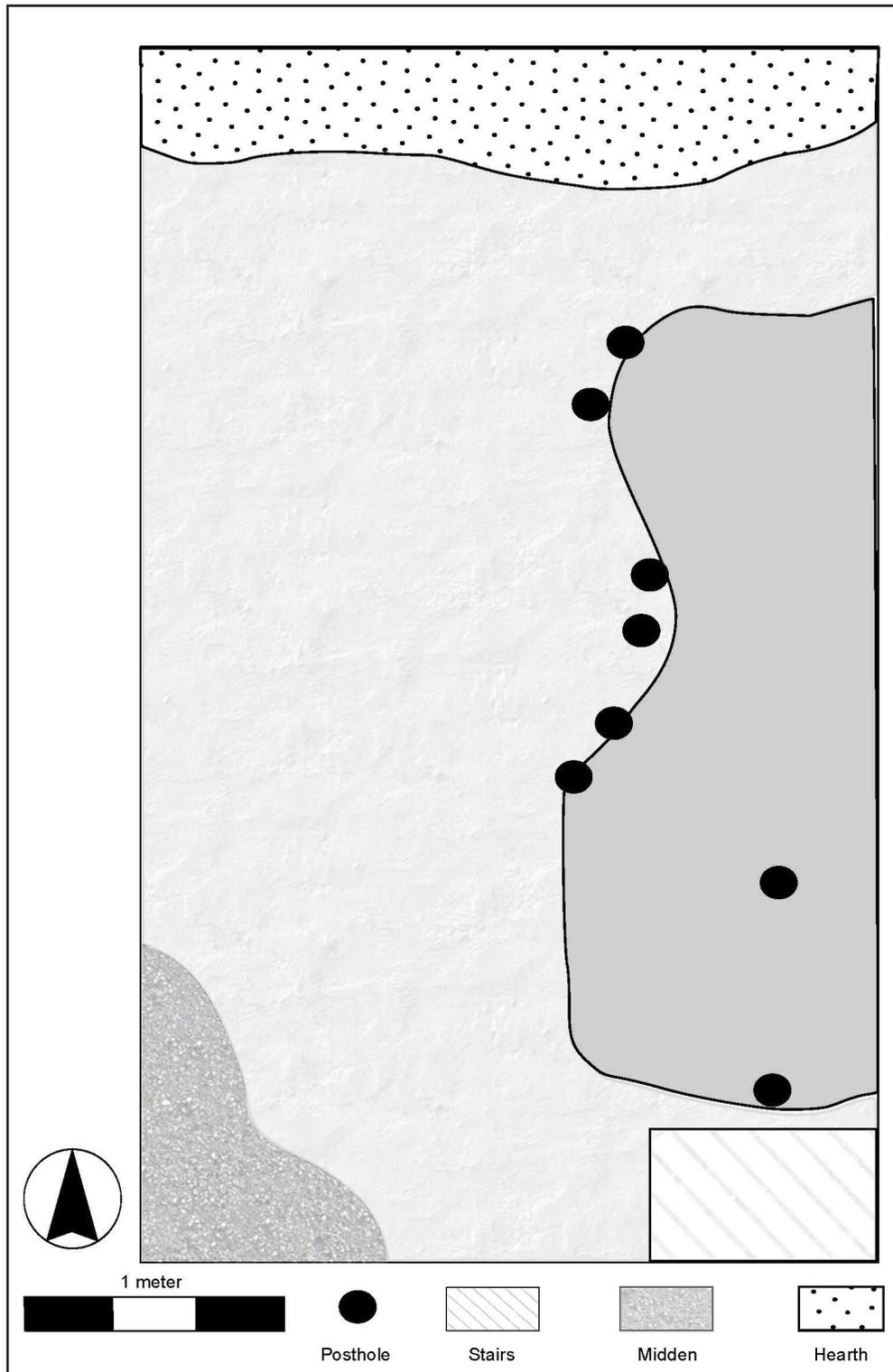


Figure 3: Unit 1 level 12.

both decors (here defined as an individual decorative treatment), and motifs (a specific combination of individual decors). Within the assemblage, 20 distinct rim forms, 47 decors, and 270 different motifs were recorded, providing a robust data set to be used in defining material culture change within the site complex, and potential stylistic affinities within the broader region (Figure 4 and 5).

Unfortunately, there is a general lack of datable ceramic sequences for the first millennium BC throughout Africa (Breunig and Neumann 2002). Therefore, only tentative, and very elementary connections can be made at this time. However, there are a few aspects of the Diallowali assemblage that

are shared by neighboring regions, which may shed light on potential inter-regional associations. Unsurprisingly, material from the contemporary site of Walalde shares several characteristics with that of Diallowali. These included impressions of cordons - “notching” in Deme’s (2004) vocabulary, the large variation of geometrically impressed comb patterns, and a particular motif involving comb or twine impressions over fish vertebrae roulettes. Further down-river, the likewise contemporary site of Khant shares several features with Diallowali, including a particular variation of a wide-spaced cord-wrapped stick. Across the river in Mauritania, Vernet (1993, 1999), and Gallin and Vernet (2004) have defined several “cultures” in the region around Nouakchott based on

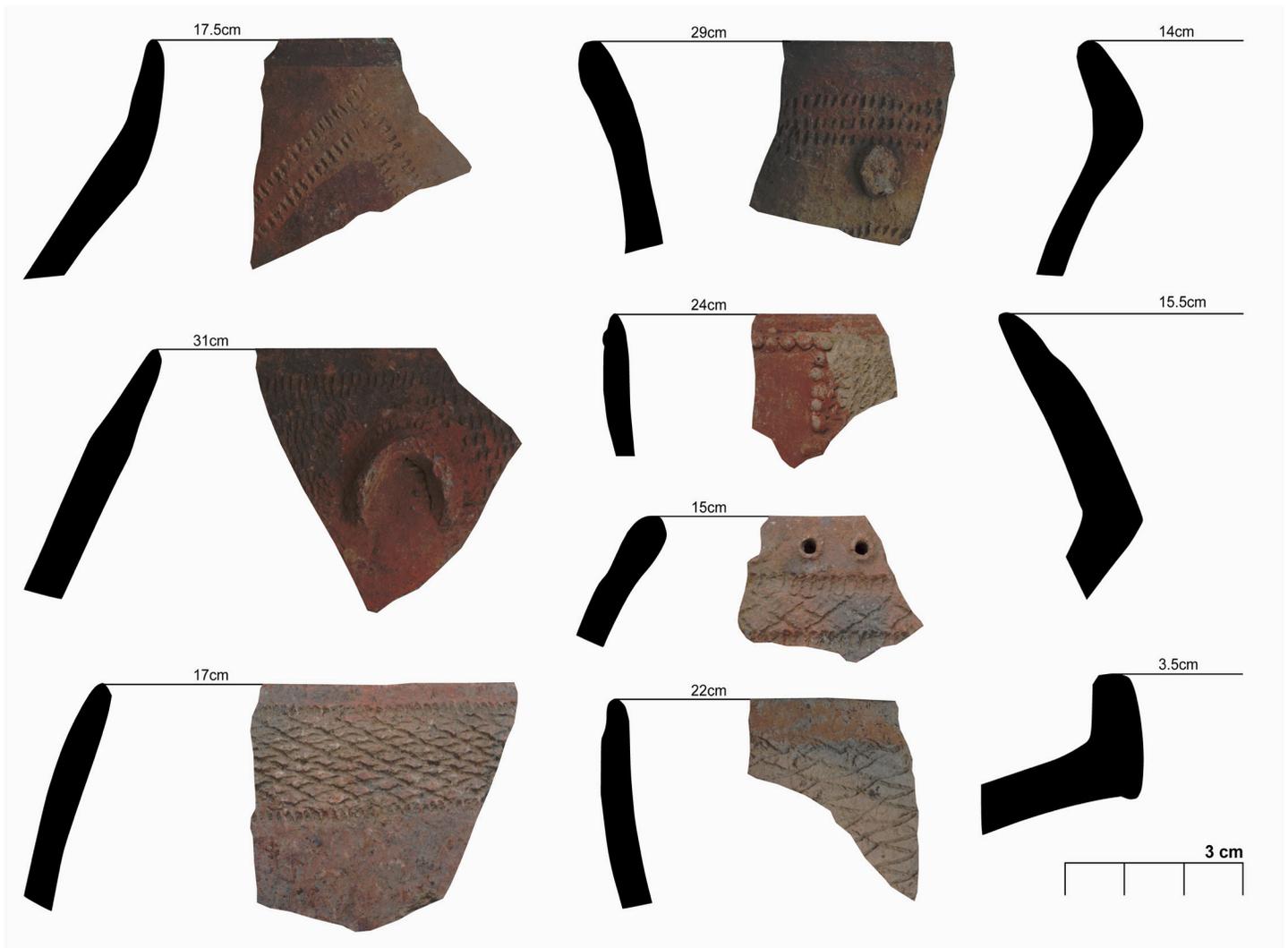


Figure 4: Rim profiles.



**Figure 5:** Comb impression, cord-wrapped stick, paint, fish vertebrae roulette.

surface ceramics that share many attributes with Diallowali. The globular, restricted-mouthed vessels of the “Bouhdida culture” and “Tin Mahham culture” are often decorated with triangular geometric comb and/or cord-wrapped comb impressions. Likewise, the Diallowali and “Fkaïrine culture” ceramics often have bands of twine roulettes just below the lip of simple rimmed vessels.

Defining cultural connections based solely on stylistic similarities of ceramics is a tenuous proposition. It would be a mistake to take these preliminary findings as definitive markers of trade, exchange, or relation, and should rather be taken as hypotheses to be tested in future research campaigns. However, the possibility of these regions being engaged in trade or exchange is very real, and should be further investigated. Additional analysis of the ceramic material will certainly play a part in shedding light on the possibility of these tentative associations.

The second most numerous category of material recovered from the excavations was that of faunal remains. Jessamy Doman from Yale University conducted the analysis of the faunal samples between February and March 2014. A wide variety of wildlife has been identified, including many spe-

cies of birds and reptiles, *souidae*, *ovis/capra*, *bos*, and an assortment of wild bovinds. Aquatic fauna was also strongly represented, including mollusks, crabs, and numerous species of fish. Interestingly, a single tooth of a bull shark was also recovered from Unit 1. The results of this study will be compiled to address two main lines of inquiry. The first is to develop a model of changing subsistence practices for the site complex over the occupation range. The second will involve using the wild species represented as one of several proxy measures for environmental change. Once the analysis is complete, it will be compared with the pollen and phytolith data in order to develop an understanding of local environment conditions along the MSV.

Multiple other artifact types were also recovered from the Diallowali excavations. As previously mentioned, bone tools of various types were represented in relatively high numbers (Figure 6). Many of these implements resemble those found throughout the Sahara at sites in the Chad Basin (Breunig *et al.* 1996), near Nouakchott (Vernet 1999), and in the Méma at Kobadi (Jousse *et al.* 2008). It seems that the use of bone in these regions may be a result of the lack of abundant stone materials to fashion tools. Additionally, several examples of bone modified for



Figure 6: Small finds.

ornamentation were also recovered. Three instances of a perforated sheep/goat phalanx were recorded from Diallowali that closely match those found at Khatt Lemaïteg (Bathily *et al.* 1998), the Tilemsi Valley (Manning 2008), and in Kayar during surface collections by representatives of IFAN. Bone beads were also recovered from all of the units excavated, as were beads of marine and ostrich egg shell and semi-precious stones.

## Conclusion

The preliminary results of the first season of the DARE project suggest an intense occupation of the Diallowali Site Complex over the majority of the first millennium BC. Although the populations that inhabited the area were engaged in sheep/goat and cattle husbandry, and likely agriculture, the lack of iron technology marks an important distinction between Diallowali and other contemporary sites along the MSV. These differences are underscored by the disparity in other material culture recovered, namely ceramics and bone tools. However, several aspects of the Diallowali material imply inter-regional connections, probably extending north into Mauritania and west to the coast. As there are no known copper deposits in the region, Diallowali may have been importing the material from northern sites, possibly in the area around Akjoujt. Likewise, it is probable that communities further upriver, at sites like Walalde, were also in contact with the Diallowali populations.

The first millennium BC was a period of rapid environmental and cultural shifts across West Africa. Populations moving south, away from the drying Sahara, found refuge along the great river valleys of the western Sahel during the end of the second and beginning of the first millenniums BC. As access to water within the MSV is relative circumscribed, it is possible that these populations spread out along the river in search of suitable land available for agriculture and animal husbandry. In the case of Diallowali, population numbers grew rapidly, and by 800BC the site complex evolved into an intense occupation. Further analysis of the data collected during excavations will likely clarify the processes involved in the

rapid growth, eventual decline, and abandonment of Diallowali. The results of the pedestrian survey and geophysical prospection will undoubtedly increase our understanding of the site complex itself, as well as its position within the broader region. Future excavations at Diallowali will also shed light on the social, economic and political transformations occurring along the MSV during this crucial period.

## Bibliography

- Bathily, M.S., M.O. Khattar, R. Vernet, C. Cluzel, J.M. Ott, S. Beckouche, R. Caruba, M.F. Delarozière, and J. Evin
- 1998 *Les sites néolithiques de Khatt Lemaïteg (Amatlich) en Mauritanie occidentale.* Meudon: Centre Culturel Français de Nouakchott.
- Breunig, P., and K. Neumann
- 2002 Continuity or Discontinuity? The 1st Millennium BC-Crisis in West African Prehistory. In T. Lenssen-Erz, editor, *Tides of the Desert: Contributions to the Archaeology and Environmental History of Africa in Honour of Rudolph Kuper.* Köln: Heinrich-Barth-Institut, pp. 491-505.
- Breunig, P., K. Neumann, and W. Van Neer
- 1996 New research on the Holocene settlement and environment of the Chad Basin in Nigeria. *African Archaeological Review* 13(2): 111-145.
- Chavane, B.
- 1985 *Villages de l'ancien Tekrou: Recherches archéologiques dans la moyenne vallée du fleuve Sénégal.* Paris: Centre de recherches africaines.

Deme, A.

2004 *Archaeological Investigations of Settlement and Emerging Complexity in the Middle Senegal Valley*. PhD dissertation: Rice University.

Dueppen, S.A., and C. Gokee

2014 Hunting on the margins of medieval West African states: a preliminary study of the zooarchaeological record at Dioubouy, Senegal. *Azania* 49(3): 354-385.

Gallin, A., and R. Vernet

2004 Les ensembles céramiques de la région de Nouakchott au IV<sup>e</sup> millénaire BP : éléments de classification. *Préhistoire et Anthropologie Méditerranéennes* 13: 79-86.

Jousse, H., H. Obermaier, M. Raimbault, and J. Peters

2008 Lake Holocene Economic Specialisation Through Aquatic Resource Exploitation at Kobadi in the Méma, Mali. *International Journal of Osteoarchaeology* 18: 549-572.

Manning, K.

2008 *Mobility, climate change and cultural development. A revised view from the Lower Tilemsi Valley, northeastern Mali*. PhD thesis: University of Oxford, Oxford.

McIntosh, R.J., S.K. McIntosh, and H. Bocoum, (eds.)

2016 *The Search for Takrur: Archaeological Excavations and Reconnaissance along the Middle Senegal Valley*. New Haven: Yale University Publications in Anthropology.

McIntosh, S.K.

1999 A tale of two floodplains: comparative perspectives on the emergence of complex societies and urbanism in the middle Niger and Senegal valleys. In P. Sinclair, editor, *The Development of Urbanism from a Global Perspective*. Uppsala: Yppsala Universitet.

Thiaw, I.

1999 *Archaeological Investigations of Long-term Culture Change in the Lower Falemme (Upper Senegal Region) A.D. 500-1900*. PhD dissertation: Rice University.

Vernet, R.

1993 *Préhistoire de la Mauritanie*. Centre Culturel Français A. de Saint Exupéry. Nouakchott, Mauritanie: Sépia.

1999 Les Harpons en os de la région de Nouakchott et la culture de Bouhdida (2700-2000 B.P.). *Annales FLSH* (Université de Nouakchott) 6: 37-43.