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Inland traditional capture fisheries in the Congo Basin

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Session « Pêcheurs » au 23^{ème} colloque biennal de la Société des Archéologues Africanistes (SAfA). Quel passé pour l’Afrique ? Toulouse (France), 26 juin-2 juillet 2016

Veerle Linseele

- 1 From the 26th of June to the 2nd of July 2016, the 23rd biennial meeting of the Society of Africanist Archaeologists (SAfA) took place at the Université Jean-Jaurès in Toulouse (France). With 41 sessions and c. 600 participants, this was undoubtedly one of the largest editions of this conference, which brings together archaeologists, researchers from associated disciplines and others who share an interest in African archaeology and African societies. The interaction between humans and their natural environment has been a recurrent theme at the conference, and was particularly in focus of the session on African fishers, organised by Veerle Linseele (KU Leuven, Belgium, and Royal Belgian Institute of Natural Sciences).
- 2 Fishing has long played an important role in the subsistence of many populations in Africa. An emphasis on farming can be noticed in archaeological research covering the last 12,000 years of human history (the Holocene). However, even after the introduction of farming, fish often remained a major subsistence resource and fish have influenced different aspects of the life of humans as well as their natural environment. The aim of the fishers session was to bring together specialists from different fields, periods and areas, to highlight this central role of fish. Andrea Kay, addressed the question of how a high reliance on fish has a (positive) impact on human land use. Kévin de la Croix talked

about modern collective fishing practices in the River Niger, on the border of Mali and Guinea, including cultural and social aspects. He mentioned how fishers actively alter the river – they make it deeper in places – for their benefit. The subject of Edmond Dounias' paper was modern fishers from the Central African rainforests. Particularly relevant for an audience of archaeologists, were his comments on how some people use fish as a "proto domesticated" resource. Tim Insoll presented the photo archive of the late Dr. Sylvia Sikes, a magnificent source of information on traditional fishers that populated Lake Chad in the 1970's, their lifeways and technologies. After that, we moved back in time with the paper of Dirk Huyge on Late Paleolithic and Epipaleolithic rock art in Egypt. Although not the main motive of most of the rock art, the presence of fish and fishing equipment, suggest their importance in symbolic and ritual life. Dirk Huyge made a plea to look for fish in rock art in other areas where fishing must have been an important activity. Benjamin Smith presented modern fishing techniques and equipment of Lake Turkana (Kenya) and how they vary depending on the specific habitats that are being exploited, while Loretta Dibble discussed barbed bone points from archaeological sites in the same general geographic area. Veerle Linseele gave a diachronic overview of the importance of fish in the Nile Valleys of Sudan throughout the Holocene. She hypothesized a link between climatic aridification and the apparent lower numbers of fish at archaeological sites from c. 4,500 years ago. Donatella Usai and colleagues presented multidisciplinary proof for fish conservation practices in the Mesolithic of Central Sudan. The analytical techniques they applied have much potential for other sites as well. The presentation by Lucie Coudert showed the results of archaeozoological analyses of material from the late 3rd-2nd millennium BC in Djibouti, near Lake Abbé. She addressed questions of seasonality and fish storage at this locality where fish abound, despite the fact that domestic livestock was already known. Annalise Christie presented first results of ethnographic and archaeological research conducted in the Maldives, as part of a project focusing on cowrie shells as an early global commodity and compared that to similar data she collected in the Mafia Archipelago (Tanzania).

- 3 It is clear that the fishers session was very interdisciplinary in nature and that multiple aspects related to African fishers were addressed. The papers on modern day fishers have shown once more the complexity of human behavior and of human interaction with the natural environment. Archaeologists probably too often do injustice to this complexity, largely because they have to base themselves on the (very limited) evidence that has stayed preserved. However, as the papers have also shown, we can grasp at least part of the complexity of life in the past. Even though the world is changing rapidly, looking at modern practices is still extremely useful to that end. A special volume of Quaternary International on "African Archaeozoology" is in preparation that will contain papers of the fishers session as well as other papers focusing on the interaction between man and animals in the past and present, presented at the SAfA conference in Toulouse.

Papers presented

- 4 Andrea Kay (University of Lausanne, Switzerland, andrea.kay@unil.ch)
Mapping and modeling African subsistence: strategies for quantifying caloric contributions from fishing
 Abstract: The importance of humans for the development of African environments over the late Holocene is a subject of lively debate. The scarcity of direct archaeological and

palaeoecological observations make modeling a potentially valuable tool for testing hypotheses on human-environment interactions. I am developing a model that is driven by both information that describes the physical environment, e.g., precipitation, soil type, and human elements including subsistence livelihood, technology, and societal complexity. The output of the model will be land cover, population, and land use. When characterizing land use, quantifying the caloric contribution from fishing presents a challenge. While fishing is not in itself a "land" use, the dietary percentage acquired from fish has an effect on the amount of land used by a society for other purposes, such as fields cleared for planting, and pasture need for grazing domestic animals. This paper illustrates the differences in land use by societies with and without fishing, present the problems associated with estimating fish intake based on archaeological assemblages, and show a time-series of maps for West and Central Africa including the distribution of fishing societies.

- 5 Kévin de la Croix (Université Paris Ouest Nanterre La Défense, Laboratoire Mosaïques, UMR LAVUE, France, kevindlc@hotmail.fr)

The Upper Niger as a hydro-palimpsest: Heritage and an update of "time territories" and collective fishing practices among Somono communities in the Mandé region.

Abstract: The section of the Niger River from the Guinea-Mali border to the Somono village of Samanyana 60 km downstream, provides an exemplary context for studying the relationships between different fishing techniques – collective and individual – and the forms of territorial, temporal and social construction current on the Upper Niger. Yet these are subject to new anthropogenic constraints that alter the relationship between fisher communities and their environment. Further, Kangaba, a much-studied place in Mandinka culture (Dieterlen 1955, Jansen 1998, etc.), demonstrates the limits of the local approach that is sometime too segmented when related to natural heritage processes: an impasse was reached in the study of a major social phenomenon, the practice of collective fishing. Collective fishing was, however, a part of the fluvial cultural landscape of the Manden as the "combined work of nature and humans », a landscape transformed by humans during economic, technological and social change (Boutrais & Juhé-Beaulaton 2005 : 45).

The study of fishing practices and territorial occupation of aquatic areas upstream and downstream from the confluence with the Sankarani allows identification of three kinds of "time territories" or "rhythmic territories". This is a physical, social and cultural frame of reference engendered by evolutionary elements for which the combined tension is constitutive of both territorialities and temporalities: i) time-territories fragmented from Siguiri to the Mali border for 55 km, ii) a specific time-territory at Kangaba with a unique system of organization over more than 80 km of the river section and iii) time-territories under pressure downstream from the confluence with the Sankarani due to the impact of the Sélingué dam and sand collectors over 70 km. Our observations have made it possible to demonstrate the still active structure of systems of collective fishing along more than 200 km of the river between Bamako and Siguiri. The Upper Niger is in this sense a "hydro-palimpsest" as defined by Habib Hayeb and Frédéric Landy (pers. comm.): as re-used medieval manuscripts reveal traces of writing from the older texts, modern territories correspond to those of heritages of lost or disappearing practices. In the present case, the tonakari – local collective fishing episodes of 1-2 days – downstream from the confluence and the organization of collective fishing in the Siguiri region upstream are signs that show that Somono fishers knew how to organize such collecting

fishing activities, in networks, over long distances. These signs, among others, evidence the coherence of their current practices with a technical, social and cultural heritage that is still valid while adapting to new constraints and logistics of exploitation of the resource and regulation of fishing activity.

- 6 Edmond Dounias (IRD-CIFOR, France, edmond.dounias@ird.fr)

Hydrographic networks, social networks. The fluid customary rules of access to freshwater resources in the Congo Basin.

Abstract: Freshwater resources of the Congo Basin rainforests are extremely diverse, and so are the ichthyological knowledge systems conceived by the indigenous fishermen. They take advantage of the densely vascularized watersheds of the rainforest whose innumerable ramifications – circumscribed to a very small area – offer an incredible mosaic of very distinctive fishing micro-sites. Each site is exploited on a seasonal basis, but their cumulative diversity ensures a continued fishing production throughout the year. This ecological patchwork of fishing sites results in complex social networks that design customary access to forestlands and related resources. Mapping these lands in order to assess any formal and exclusive boundaries is hardly feasible since these networks overlap and are tightly intermingled. Taking examples from freshwater fishermen societies in southern Cameroon, this communication emphasizes the role played by fishing camps and ponds as crucial nodes that condition fluid customary rules of access to freshwater resources in particular, and to forest resources in general.

- 7 Timothy Insoll (University of Exeter, UK, T.Insoll@exeter.ac.uk)

Sylvia Sikes, fishing, and Lake Chad.

Abstract: Born in 1925, the late Dr Sylvia Sikes was an adventurer and scholar in the old tradition. A zoologist by training she first went to Lake Chad in 1955, visited again in 1957 and 1962, and completed a then famous expedition on Lake Chad in a small motor yacht, the Jolly Hippo in 1969. Dr Sikes also visited the Lake in 1974 and had a friend visit Lake Chad on her behalf in 2002. During the course of her nearly 50-year acquaintance with the Lake Dr Sikes collected significant data. Some of this was published in her *Lake Chad* (Eyre Methuen, 1972) and revised *Lake Chad versus the Sahara Desert* (Mirage 2003), however these works are comparatively little known. Beyond her publications there also exists a substantial collection of images of Lake Chad environment, wildlife, and inhabitants. The latter, particularly the visual images recording the lifeways of the Yedina, are an invaluable resource which was purchased by the speaker in 2013 following Dr Sikes' death. These are the focus of this paper with particular emphasis placed on what they record of Yedina fishing practices, technologies, and traditional watercraft, which are now likely to have altered or largely disappeared.

- 8 Dirk Huyge (Royal Museums of Art and History, Brussels, Belgium, d.huyge@kmg.be)

Fish and fishing in Late Palaeolithic and Epipalaeolithic Egyptian rock art.

Abstract: Whereas, surprisingly, fish-related images are extremely rare in the ubiquitous 4th millennium BC Predynastic rock art in Egypt, they play a substantially more important role in the much earlier late Pleistocene, Late Palaeolithic and early Holocene Epipalaeolithic petroglyph assemblages. The c. 19,000-17,000 years old Late Palaeolithic rock art, known from Upper-Egyptian Nilotic sites at Qurta, el-Hosh and Wadi Abu Subeira, is essentially characterized by representations of aurochs (almost 75 % at Qurta), but also contains a number of indisputable fish representations, some of which can be identified to genus or even species. Their occurrence in the rock art mirrors their importance in Late Palaeolithic archaeozoological assemblages known from numerous

more or less contemporary settlement sites and hunting camps along the Nile Valley. The situation in the c. 9,000-8,000 years old Epipalaeolithic rock art, especially well known from a large number of sites at el-Hosh near Edfu, is completely different. No images of ichthyofauna itself are present, but the emphasis on fishing activities is overwhelmingly clear from numerous representations of labyrinth fish traps. Frequently appearing in clusters and occasionally as isolated figures, these designs are often associated with geometric and figurative motifs, including circles, ladder-shaped drawings, human figures, footprints and crocodiles. The sophisticated fish trap devices displayed in the el-Hosh rock art, in reality probably rather used in the floodplain waters, may have been a major Epipalaeolithic technological innovation. Traps identical in design to the el-Hosh specimen are currently still being used along the Egyptian Red Sea coast. Little of significance can be said about the meaning and motivation of the fish-related imagery in the Late Palaeolithic and Epipalaeolithic rock art assemblages. As regards el-Hosh, it may tentatively be suggested that the representations of fish trapping devices possibly relate to ritual techniques that had to be observed in order to increase the efficiency of fishing gear and to secure a "miraculous draught of fishes". It may be considered ethnographically plausible that the area of el-Hosh was, in fact, the location of a seasonal congregation of people that came here at the time of the flood season or shortly afterwards to perform concerted fishing activities, and quite possibly, associated ceremonies and rituals, that may have included the creation of rock art.

- 9 Benjamin Smith (University of Florida, USA, bdsmith2015@ufl.edu)

Barbed bone points: an ethnoarchaeological perspective on selective fishing on the shores of Lake Turkana.

Abstract: As riverine and lacustrine environments expanded across north tropical Africa during early Holocene times, certain characteristic methods emerged for fishing or "aquatic hunting". This project investigates one such method: barbed bone "harpoon" points from the Turkana Basin, NW Kenya. These tools have a geographically widespread, yet temporally confined, distribution across Africa primarily north of the equator and shed light on hunter-gatherer technology, tool use, and resource acquisition in a context of environmental and social change. Ethnoarchaeological studies of modern local fishing practices reveal contexts of near-shore fishing methods and tools analogous to those of early Holocene Turkana. For example, modern Turkana fishers have traditionally employed harpoon-like tools to acquire the largest, often shallow water fish species, while using baited hooks and traps for smaller and deep-water species. Reproduction experiments demonstrate the significant time required to produce these points and provide a foundation for reanalyzing collections from archaeological sites west of Lake Turkana. An analysis of these collections demonstrates new ways of investigating variability in site use. The paper concludes with some reflections on the implications of barbed bone point research for better understanding changing mobility strategies, resource intensification and technological innovation during early Holocene times.

- 10 Loretta Dibble (University of Nairobi, Kenya, dibble@rci.rutgers.edu)

Holocene worked bone barbed harpoon technology (Turkana/Omo Basin, Kenya/Ethiopia): a basin scale perspective of changes in resource use and fishing practices.

Abstract: Barbed bone harpoon points are found in conjunction with former lake shore and riverine settings in northern and eastern African regions. This paper focuses on the bone artifacts recovered from more than 30 archaeological localities around Lake Turkana (Kenya/Ethiopia) and along the Omo and Kibbish Rivers (Ethiopia). These

worked bone artifacts characterize changes in human subsistence strategies from hunter-gatherer foraging lifeways to intensive use of aquatic resources. These worked bone artifacts hold many clues to understanding local and regional human dietary and resource utilization shifts towards food production and natural resource management. Bone harpoon sites in this basin span more than 10,000 years (approximately 13,000 BP through 3,000 BP) and one question is if regional or temporal harpoon variation can be tied to variations in fishing practices and to utilization of different fish resources. Kathy Stewart suggested that there was a shift from larger fish prey (particularly Nile Perch) during the early Holocene (when harpoon technology is ubiquitous) to smaller species mid-Holocene, and that this shift indicates a utilization of different fishing technology and the beginnings of pastoralist life ways. The work presented here may add additional dimensions to this discussion. Throughout the basin considerable spatial and temporal variation exists in features such as harpoon length, heft, barb design, and attachment styles. Post-tool production variables such as harpoon usage breakage patterns and taphonomic variation also vary from site to site. These harpoon points are most frequently found in association with abundant fish bone. The bone harpoons have considerable size and form variation. In some locations you find groups of very small harpoons and, conversely, there are sites with relatively large harpoons or harpoons that are distinctive in other ways. Why are there such differences in the harpoons and do the assemblages of fish remains that are found in association with these harpoons exhibit variation? A theoretical framework of harpoon functional variation is presented that encompasses environmental differences, differences in prey species, and patterns of tool use. The goal is to use the archaeological record to test the hypothesis derived from this theoretical model and to identify patterns of harpoon production and usage. How this research can connect to larger issues related to movement of peoples and the persistence and function of bone technology is considered.

- 11 Veerle Linseele (KU Leuven and Royal Belgian Institute of Natural Sciences, Belgium, Veerle.Linseele@kuleuven.be)

Done with fish? A diachronic study of fishing in the Holocene valleys of the Nile and its tributaries in Sudan.

Abstract: I am currently working on a project in which I investigate the role of fishing throughout the Holocene in the Niger Valley of West Africa and the valleys of the Nile and its tributaries in northeastern Africa. The project rose from previous observations that fish bones are often numerous at archaeological sites in these areas, also after the arrival of food production. The project's main hypothesis is that in certain places fish were so abundant that they could be exploited on a large scale, impacting the environment much less so than hunting or stock keeping. A first regional study is presented, focusing on an area within the borders of modern North Sudan. This part of Africa is renowned for its early and middle Holocene archaeological sites with plentiful fish and other aquatic fauna. However, at sites from the pre-Kerma period (c. 3,500-2,500 BC) and certainly from later, historical periods, fish bones have not been found in any significant numbers. A lack of fishing near a large water basin seems contra-intuitive. The paper investigates whether fish really lost importance in Sudan through time, based on a synthesis of the available archaeozoological data. Environmental as well as socio-cultural factors are considered while explaining trends that can be observed. The data presented include newly obtained results from archaeozoological studies at Mesolithic and Neolithic sites near Al Khiday and Al Salha, which cover a sequence between c. 7,000-4,000 BC.

- 12 Donatella Usai (Centro Studi Sudanesi e Sub-Sahariani, Italy, donatellausaisalvatori@gmail.com), with Sandro Salvatori, Paola Iacumin, Lara Maritan, Andrea Zerboni, Giampiero Venturelli, Gregorio Dal Sasso & Veerle Linseele
Fish processing at Al Khiday Mesolithic site in Central Sudan.

Abstract: The Central Sudan Mesolithic, known also as Khartoum Mesolithic, entered the context of the recent prehistory of northeastern Africa thanks to the rescue excavations at the Khartoum Hospital site carried out by Antony J. Arkell on behalf of the Sudan Antiquities Service in 1944-45 (Arkell 1947, 1949). A community of pottery bearing hunter-gatherer-fishers settled the site during the Early Holocene. Evidence from many sites recorded by survey activities and few systematic or explorative excavations, proves a prolonged exploitation of the river banks of the main Nile north of Khartoum, of the Blue and White Nile, of the now inactive Wadi Howar and Wadi Muqadam rivers. Unfortunately, the lack of anthropogenic stratified deposits, due mainly to post-depositional processes, seriously prevented any reliable reconstruction of settlement system and material culture variation along the lengthy time span covered by these Early Holocene hunter-gatherer-fishers. This can partially explain why the Khartoum Mesolithic is practically never mentioned and used in the theoretical debate on hunter-gatherer-fishers. Recently, archaeological research along the western bank of the White Nile, c. 25 km south of Omdurman, located and excavated some stratified Khartoum Mesolithic sites (Al Khiday 1, 2, 2B and 3) covering a period of more than one thousand years. The main settlement (Al Khiday 1) and the recovered associated activity and refuse areas (Al Khiday 2 and 2B) suggest the community moved from an Early Mesolithic residential mobility to a more reduced mobility during the Middle Mesolithic. This change may also have been granted by the development of food storage practices. The many trash pits of Al Khiday 2B, in fact, produced consistent traces of fish processing. Different sets of analyses have been applied on sediment deposits, faunal remains and pottery to support this evidence.

- 13 Lucie Coudert (Université Toulouse II Jean Jaurès, France, lcoudert@univ-tlse2.fr), with Joséphine Lesur, Jessie Cauliez, Xavier Gutherz & Fabienne Pigiere
The importance of fishing in Northeast Africa: the example of the sites around the Abbe lake (Djibouti, III^e-II^e millennium BC).

Abstract: Asa Koma is a site in Djibouti, located at around 30 km from lake Abbe's current banks, dated between the end of the 3th millennium and the beginning of the 2th millennium BC. It is a very important site for the understanding of the first food production societies in the Horn of Africa, because it is one of the first sites in the region that yielded domestic cattle remains. Nevertheless, domesticates seem to have played only a very secondary role in Asa Koma's economy. Fish represent by far the most important food resource and fishing was most likely the main reason for Asa Koma's occupation. However, this importance of freshwater resources in Asa Koma does not provide information about their role in diets on a year-round basis. Indeed, stratigraphic and geoarchaeological studies clearly show that occupation at Asa Koma was seasonal, even if they do not allow to determine the length of the periods of abandonment and occupation. By contrast, analyses of the ichthyofauna permit the formulation of four main hypotheses an absence of small individuals due to fishing gear, a gathering in spawning areas during the floods, a fishing during the receding water level, or a fishing in lake's deep waters on craft during the low water season. In any case, the huge amounts of fish suggest very strongly a wide-ranging communal fishing. This large number of fish

remains also raises the question of storage, which is crucial in a context of neolithization and which is also by the presence on the site of two types of hearth, and an important grinding material associated with a lack of seeds, which may lead to suggest the fabrication of fish meal. A possible storage strategy is, however, difficult to highlight from an archaeological point of view, because ethnographic studies show that even the most convincing elements generally used to propose a storage practice hypothesis, may actually correspond to very different behaviors, not necessarily involving a large scale storage. However, we need to wonder if it is possible to approach storage and mobility issues through comparisons with assemblages of several contemporary sites around lake Abbe, such as Wakrita.

14 Annalisa Christie (University of East Anglia, UK, annalisa.christie@gmail.com)

Maritime Practices in the Indian Ocean: Examples from the East Africa and the Maldives.

Abstract: The exploitation of marine resources (fish and shellfish) is a key component of maritime cultures – both in terms of the role these resources play in subsistence economies as well as the ways in which such activities influence, and are influenced by socio-cultural organization. This paper explores the impact of environment and economy on maritime practices (in particular fishing and shell-fishing) around the Indian Ocean. It will use examples drawn from recent ethnographic and archaeological research conducted in the Maldives, as part of the Leverhulme Funded, Cowrie shells: An Early Global Commodity project led by Dr Anne Haour and Prof. Alastair Grant (co PI), in comparison to similar data collected in the Mafia Archipelago Tanzania, as part of my doctoral research project: Exploring the socio-cultural context of maritime exploitation in the Mafia Archipelago, Tanzania. It examines variations and similarities in the methods of exploitation and processing, species selection and resource use in the two areas evaluating these in light of geography, environment and economy.

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