

## 6. Detecting shifts in mobility strategies in prehistoric and contemporary forager societies

### 16224 - Changes or continuity? Subsistence and mobility of the hunters and foragers from the Paleolithic to Mesolithic in Eastern Europe

Presentation type: Oral presentation

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Like other cultural transitions in prehistory, geographical variation underlies the emergence of Mesolithic period and the adaptation of hunter-gatherers during this temporal period when there were significant climatic fluctuations. The systematic assessment and comparison of Late Upper Paleolithic and Mesolithic sites remain to be fully conducted in parts of the Old World, including the steppic region of Eastern Europe. The area is well known for a rich Upper Paleolithic record as well as recent findings that point to the importance of hominin population originating from this region, especially for Europeans. Here, we present the preliminary results of the faunal analysis from multiple open air sites in Ukraine and Russia that span the time of Pleistocene to the Holocene dated to roughly 20,000-6,000 BP. Zooarchaeological and stable isotopic data on the animal remains are evaluated in combination with existing zooarchaeological data from other sites to document the shifts in human subsistence and mobility, if any are present. The combination of zooarchaeological and stable isotopic analysis provide a way of assessing the seasonality and therefore test whether there are decrease or variation in the degree of mobility among hunter-gatherers. Further, it is worth exploring whether climatic warming towards the end of the Pleistocene temporally corresponds with humans' behavioral patterns at the end of the Upper Paleolithic and Mesolithic. This project ultimately aims at exploring the subsistence and mobility of hunter-gatherers to better understand how the shifts in human adaptation evolved in times of global environmental changes.

## **16166 - The Role of Mobility in Changing Subsistence: A Case Study of the Hadza in Ethnic Tourism in Tanzania**

Presentation type: Oral presentation

**Author(s):** *Yatsuka, Haruna (Nihon University, Shizuoka, Japan)*

In the past, the Hadza hunter-gatherers of Northern Tanzania lived in small nomadic camps and moved frequently. The composition of these camps was flexible, and individuals and families constantly moved in and out for various reasons (Kaare and Woodburn, 1999). In the 1990s, however, cultural tourism took hold, with foreigners coming to the Hadza camps to see their “traditional” lifestyle. While there were few tourists at first, the number of tourists has increased since the 2000s, mainly in Mang’ola Ward, the northeastern part of Hadzaland. Tourism has had a measurable impact on the Hadzas’ subsistence, diet, settlement patterns, and mobility. I conducted research during 2012 and 2013 in a Hadza camp in Mang’ola. In Mang’ola, most Hadza live in camps in the bush, but in other areas, some live in villages. The camp I stayed had been stationary for more than one year. During my stay in December 2012, there were thirty adults (including youth) and fourteen children in the camp, though they often visited other camps. When I visited the camp again in August 2013, two-thirds of the members had changed. I followed up with those who had left and investigated why they had moved away from the camp. In the large area of Hadzaland, tourists tend to focus on Mang’ola, while in the other parts of the region, some Hadza engage in small-scale farming complementally. In my field research, I found that one of the reasons of their residential mobility was due to tourism. The Hadza know what tourists want to see and sometimes non-Hadza tour guides suggest them where they had better to stay. In logistical mobility, individuals sometimes went to Mang’ola to be a part of tourism activities and to look for cash income. In other instances, they say they are “tired” of being involved in tourism and decide to leave Mang’ola and go to other areas to engage in other subsistence activities such as hunting, gathering, and horticulture. Namely, when they stay in Mang’ola, most of them are involved to tourism, while when they are tired, they can separate from tourism by leaving Mang’ola. The Hadza have many options for subsistence, including tourism, and their flexible mobility enables them to use many of those options. Even if hunter-gatherer’s subsistence activities have changed, we could find some recent significance of their mobility. In this presentation, I will discuss the current role of mobility in changing subsistence in the case of the Hadza in ethnic tourism.

## **16165 - Foraging and Mobility in Contemporary Alaska: Realm of the 21st Century Industrial Hunter-Gatherer?**

Presentation type: Oral presentation

**Author(s):** *Van Lanen, James (Alaska Department of Fish and Game, Anchorage, USA)*

Prehistoric indigenous hunters and gatherers adapted to the boreal and arctic ecology of Alaska via employment of mobility for large game hunting, and seasonal camps for fishing and foraging. Today in Alaska wild resource harvests remain highly important to residents and successful hunting, fishing, and foraging practices continue to require mobility. However, domiciles are permanent and sedentary adaptations are the norm. Motorized transport is the primary means by which mobility is employed for hunting and gathering activities. As a result, hunters and gatherers are able to travel long distances to harvest wild food and return to permanent settlements. Seasonal mobility, such as relocation to fish camps, continues to play a role in wild food harvesting activities for some groups, but has declined. An almost complete adaptation to motorized transport means that traditional methods of transport for hunting and gathering, foot travel, snowshoes, boat paddling, and dog sleds, have largely fallen out of practice, along with the skillsets necessary for accomplishing mobility by non-industrial means. Motorized mobility requires some level of success in the cash economy and those most successful in the cash economy are often the most successful hunters because they can afford to purchase mechanized equipment and the fossil fuel required to power it. When fossil energy costs rise, or machines break down, hunting and gathering activities become less practical. Ethnographic research informs us that in these scenarios hunting and gathering activities decline for many people and they instead rely on others for wild foods or stop using wild foods altogether. A minority of persons attempt to move away from fossil energy dependence by employing traditional and/or alternative methods of transport. Mobility loses its importance when a community or person has access to store-bought foods. Using limited funds to purchase food rather than purchase fuel for a hunt plays a role in decision making regarding cost benefit analysis. In some regions low-income indigenous groups with longstanding hunting and gathering traditions must compete with large contingents of well-funded and well-equipped Euroamerican hunters and fishers for wild foods. Hunting, fishing, and gathering for wild food is core to the social identities of many modern Euroamerican Alaskans. Also core to modern Euroamerican Alaskan hunting and fishing praxis is a heavy reliance on mechanized transport, including motor boats, ATVs, snow machines, and aircraft. Indigenous hunters, fishers, and gatherers find themselves competing for wild resources against an unprecedented level of industrial mobility. These trends in mobility have led to large scale social change for hunter gatherers in Alaska. How resilient are Alaska's indigenous hunting and gathering traditions in the face of these trends? How can we monitor the long-term effects of shifting mobility in Alaska's contemporary forager societies?

## **16127 - How should we relate hominin mobilities to those of other animals in the European Upper Palaeolithic?**

Presentation type: Oral presentation

**Author(s):** *Davies, William (University of Southampton, Southampton, Un. Kingdom / Ver Königr.); Julien, Marie-Anne (University of Southampton, Southampton, Un. Kingdom / Ver Königr.)*

Attempts to reconstruct hominin and other mammal mobilities for the European Early Upper Palaeolithic have seldom been combined. In this paper, we discuss the potential for reconstructing hominin ecologies for this period (45-14 ka) in their broader setting. Different sources of evidence for hominin movements and exploitation of resources will be critically explored through the example of different case studies. These patterns will be fitted into a broader context of environmental productivity and climatic/environmental change.

## **16078 - How does mobility affect sharing, cooperation and group size?**

Presentation type: Oral presentation

**Author(s):** Solich, Martin (University of Cologne, Köln, Germany/Deutschland)

The aim of the presentation is to discuss the implications of interdependences between mobility strategies and social behaviors such as sharing and cooperation. Based on a model of adaptation processes developed with the help of agent-based modeling, behavioral strategies among hunter-gatherers are here shown to form dynamic interrelated systems. Modifications of one strategy can therefore have considerable impacts on the other strategies. Understanding these effects is crucial for a comprehensive study of the processes related to shifts in mobility strategies. In order to explain those interdependences, the presentation focuses on the relationships between mobility, sharing, cooperative foraging and grouping. Exploring these interrelationships shows that mono causal links are not sufficient to explain behavioral changes related to mobility. It is for example necessary to understand the interrelation of cooperative foraging and grouping in order to detect the probable effect of mobility changes on both. A broader perspective on the interdependences and associated dynamics serves to develop concrete hypotheses on the effects that mobility shifts have on social behavior and in turn also the impact of social changes on mobility. To illustrate the assumed interdependences and implications, the presentation refers to simulation results and to ethnographic examples from Central Africa.

## **16196 - How can decision making procedures of human foragers be modeled?**

Presentation type: Oral presentation

**Author(s):** Henn, Stephan (University of Cologne, Cologne, Germany / Deutschland)

An important aspect of Agent Based Models (ABM) is the design of the decision making process of the agents. As with all models, this should only include aspects which are relevant for the underlying system, they should be transparent and intelligible. What aspects are considered relevant depends on the applied research question, theoretical approach as well as spatial and temporal scope.

In this presentation I provide an overview of how decision making processes have been implemented in a number of ABMs addressing in some way hunter gatherer mobility.

I will place these in relation to the original research questions and try to create a systematic frame of reference that can help to locate own research and research potentials within the field of ABM on forager mobility.

Amongst other things, I will look what environmental information is available to agents representing human foragers. How is this information processed and evaluated by the agents? What actions are possible to them? Do agents represent individuals or aggregates like families or households? How are interactions between agents implemented? And what assumptions have been used to model the decision making process of agents?

## **16011 - Did climate change drive settlement shifts in late Holocene northern Australia?**

Presentation type: Oral presentation

**Author(s):** Brockwell, Sally (*Australian National University, ACT, Australia / Australien*)

Recent research into stable isotopes from shell mounds in northern Australia demonstrates the existence of variations in temperature and rainfall from 2000 to 500 cal BP. This data confirmed that changes observed in Aboriginal mollusc exploitation during this period reflect broader coastal environmental transformations associated with late Holocene climatic variability. It has been proposed (Hiscock 1999) that during this period, some populations may have relocated from a less productive coastal environment to highly productive subcoastal freshwater wetlands that were developing at this time. This paper tests this hypothesis by examining evidence from the Adelaide River earth mounds in the Northern Territory of Australia that are located adjacent to freshwater floodplains some 50km inland from the present day coast.

## **16026 - We know when, we know what, but how long did they stay? - Thoughts on a distinct occupation event at Krems-Wachtberg more than 30,000 years ago**

Presentation type: Oral presentation

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Well-known for the discovery of infant burials, the Krems-Wachtberg 2005-2014 excavations provided a wealth of data in ten years of investigation. Of major importance is the exposure of an occupation layer, AH 4.4, which connects the burials to other activities conserved in evident structures such as pits and hearths. The finding offers valuable insights into life and death at a Pavlovian campsite more than 30,000 years ago. Does it however tell us something about the occupation span?

Precondition is control of the site formation factors. Only in situ remains are interpretable regarding the determination of a particular occupation's duration. Although the record is incomplete and not everything can be reconstructed, excellent preservation allows the isolation of specific activities within AH 4.4. These include the production of stone tools from a variety of raw materials reflected in differentiated scatters. The same can be stated for the remains of prey animals, where distributions pattern not only along species lines, but also functionally as for the thousands of mammoth bone chips suggesting systematic bone grease extraction. Processing and application of colour materials is evidenced by mineral pigments, hammerstones and slabs with colour traces, painted objects, as well as the use of ground colour material in the graves. Ceramic production involved sourcing and/or mixing suitable sediment to produce a mouldable paste from which zoomorphic figurines were formed and then baked. Not least the infant burials evidence activities ranging from the construction and decoration of the graves to the adornment of the individuals.

Obviously the timespan of a specific occupation cannot be determined by relative or absolute dating approaches. Dendrochronology only states that wood grown within a certain timespan was burnt in a particular context and can therefore rather be used as a proxy to establish chronological relations between occupations. Assessing occupation span from the mere quantity of remains is problematic as we never know what is missing. Also it depends on the (unknown!) group size. An important evidence is sparse for AH 4.4. It consists of a single specimen and points to spring. Useful proxies are diversity of activities and chronological depth. The first does not allow determining a concrete timespan but rather comparative inter-site assessments. Chronological depth is indicated by distinguishable fill layers. This is best represented in the multi-phased hearth where a fire burnt at least three times and was put out at least twice.

Considering hard facts only the occupation span of AH 4.4 did not exceed one season and was not shorter than a few days. From a more integrated perspective, however, the lower end of the potential time span hardly accounts for the high diversity of activities, or a plausible reason why the fire was not kept burning under the periglacial conditions in a spring more than 30,000 years ago.

## **15914 - Hunter-gatherer mobility around the Carpathians between 29 and 13 ka BP, Eastern Central Europe**

Presentation type: Oral presentation

**Author(s):** Lengyel, György (*University of Miskolc, Department of Archaeology and Prehistory, Miskolc, Hungary / Ungarn*)

Lithic tools, quite objective sources of archaeological data, are a heavy argument in the consideration of archaeological cultures. In spite of this, there is no consensus among scholars in the cultural division of the period between 29 and 13 ka BP in the region of the Carpathians. The consequence of disagreement is a diverse cultural interpretation of the period. Nonetheless, involving ethnoarchaeology into the understanding of lithic remains seemed to overcome some problems of cultural classification.

I conducted lithic technology studies, paired with raw material provenience analysis, on assemblages of Hungary of the period 29-13 ka BP. The goal of the research was to reveal the “technical behavior” of hunter-gatherers, which I attempted to interpret through models of hunter-gatherer ethnoarchaeology. I realized that the regnant, also classical, archaeological approach to understand the archaeological record around the Carpathians between 29 and 13 ka BP frequently relied on the misinterpretation of radiocarbon dates, inconsistent typological classification of artifacts, and fine details in lithic technology. These all seemed to obstruct to achieve a reasonable view on the behavioral issues of Pleistocene hunter-gatherers and could have caused the disagreement on the understanding of this period.

In this paper, I claim that the formation of the archaeological records between the territories of the Carpathians (Western Carpathians, Eastern Carpathians, and Carpathian basin) were closely related due to intense mobility in warmer periods, and on the other hand unrelated, due to decreased mobility during the maximum extent of Fennoscandinavian ice sheet and local glacial areas in the Carpathians. Thus, the various conditions of subsistence, including climatic and environmental, too, and strategies of mobility may have caused the lithic artifact variability in typology and technology.

## **16587 - Detecting shifts in mobility strategies at Willendorf II (Lower Austria): a comparative analysis of Aurignacian and Gravettian lithic raw material use**

Presentation type: Oral presentation

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In Europe, the period between 32 and 27 ka BP witnessed a deep socio-economic change in human evolutionary history, which roughly coincides with the cultural change from the Aurignacian to the Gravettian. Among the important novel features accompanying this phenomenon are the first unambiguous Upper Palaeolithic burials in Europe alongside the appearance of extremely large, intensively used open-air settlements, attesting patterns of increased residential stability. A significant behavioural shift occurring within this time period further concerns the organization of lithic raw material economies in association with variable blank production objectives and modalities. However, given the scarcity of stratified (late) Aurignacian and (early) Gravettian assemblages within a single location, the behavioural shift in raw material provisioning remain poorly understood, let alone investigated.

We present a case study of changing mobility strategies among prehistoric hunter-gatherers based on the analysis of raw material economies from two stratified lithic assemblages of a single location. Willendorf II (Lower Austria) provides the longest and best-studied MIS 3 sequence in the Middle Danube region, and represents one of the key reference sequences for this time period in Central Europe. The assemblages chosen for comparative analysis derive from the archaeological horizons 4 and 5, attributed to the (late) Aurignacian and (early) Gravettian, respectively.