

# Raw material economy and mobility in the Rhenish Allerød

## *Rohmaterialökonomie und Mobilität im rheinischen Allerød*

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**ABSTRACT** - Hunter-gatherer mobility in the Allerød has long been suspected to be fundamentally different from preceding and following periods due to the development of forested vegetation following the Allerød warming. Now, new primary data from a recently excavated, well-preserved Federmesser site in Wesseling can contribute to this question. An in depth analysis of the raw material use and spatial organisation of Wesseling including operational chain reconstruction, refittings, least cost analysis and statistical evaluation in comparison with other Federmesser assemblages can shed light on the mobility patterns of the Rhenish Allerød hunters. The results indicate a residential mobility pattern focused on an embedded procurement of the closest sources of raw material in a radius of roughly 100 km around the sites. In the case of Wesseling the potential route of raw material acquisition could be reconstructed to have led from the end-moraines at Krefeld, over Aachen and Bonn-Muffendorf to Wesseling. The comparison of contemporary Rhenish inventories furthermore hints at the presence of different regional systems oriented along the major drainages and topographic features as of yet insufficiently understood.

**ZUSAMMENFASSUNG** - Die Mobilität allerød-zeitlicher Jäger und Sammler wird seit längerem in der Literatur als grundsätzlich unterschiedlich von den vorherigen und folgenden Perioden eingeschätzt. Die allerød-zeitliche Wiederbewaldung wird als hauptverantwortlicher Faktor für eine opportunistische Ressourcenausbeutung und eine geringere Gruppengröße der federmesserzeitlichen Jäger und Sammler genannt. Nun können neue Primärdaten aus dem kürzlich untersuchten, gut erhaltenen Federmessersiedlungsplatz Wesseling dieses Bild unterstützen und präzisieren. Eine detaillierte Untersuchung der Mengen und Gewichtsprozentanteile, der erhaltenen Operationskettenstadien der verschiedenen Rohmaterialien, sowie der Gerätenutzung in Wesseling erbringen klare Anzeichen für eine Rekonstruktion der Wanderroute von den Endmoränen in Krefeld, über Aachen und Bonn-Muffendorf nach Wesseling. Weiterhin zeigt die Auswertung der Flächenorganisation des Fundplatzes klare, funktional getrennte Aktivitätszonen mit unterschiedlicher Rohmaterialkomposition auf, welche das Bild der Besiedlungsereignisse an diesem Fundplatz präzisieren. Im fundstellenübergreifenden Vergleich ist eine klare Nord-Süd Dependenz der genutzten Rohmaterialien statistisch nachweisbar, welche das vermutete Bild der eingebetteten Rohmaterialbeschaffung unterstützt und das Einzugsgebiet der Fundplätze auf einen etwa 100 km Radius beschränkt. Weiterhin zeigt der Datensatz Hinweise auf bisher unzureichend verstandene, regionale Untersysteme, welche sich an den primären Entwässerungssystemen sowie an den wichtigsten topografischen Einheiten im Untersuchungsgebiet orientieren.

**KEYWORDS** - Late Palaeolithic, Final Palaeolithic, spatial organisation, constrained correspondence analysis, operational chain sequences, least cost analysis  
Spätpaläolithikum, Endpaläolithikum, Flächenorganisation, Kanonische Korrespondenzanalyse, Operationsketten

## Introduction

Repeated rapid and strong climatic changes at the end of the Pleistocene change the living conditions of hunter-gatherer communities radically. Especially the Allerød period, dated between 11'900 and 10'800 calBC caused a climatic amelioration leading to vegetal expansion and reforestation, forming the greatest environmental shift before the onset of the Holocene. This sudden change in environmental productivity and land cover forces rapid human adaptation of resource exploitation and mobility. Such adaptational reactions are

best understood through provenance studies and on site-spatial plotting of the used lithic raw materials. However, well-dated and well-preserved late Pleistocene sites are rare in the Rhineland due to low sedimentation rates and strong modern overprint. One exception is the Federmesser site of Wesseling for which the primary results of the raw material analysis shall be presented here. Subsequently, it will be compared to additional well-preserved assemblages with the aim to understand the development of mobility in connection to climatic fluctuations.

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**The site of Wesseling**

The site lies on the left side of the Rhine between Cologne and Bonn in the Western part of Germany at the outskirts of a small industrial town called Wesseling (Fig. 1). It yielded very well-preserved remains of a Federmesser or Azilian occupation with different activity zones including gravel pavements, brown coal art objects and several grinding slabs as well as haematite pigments (Heinen 2014, 2016). <sup>14</sup>C dates place it in the middle of the late glacial GI-1c1 (Heinen 2016: fig. 21). The site lies at the slip-off slope of an abandoned meander left by the braided river course of the Pleistocene Rhine. It is currently unclear if and to what extent the meander was connected to the Rhine system during the time of occupation in Wesseling, although it has certainly been water bearing as the site was repeatedly flooded and is embedded in alluvial loams (Fig. 2). The horizontal and vertical find distribution suggests little geo- or bioturbatic influence on the material. The preservation of the site is affected by constructions from the time of the Second World War leading to spatially well-definable areas without preserved Pleistocene remains (Fig. 3). In total 1'100 m<sup>2</sup> were excavated of which 700 m<sup>2</sup> preserved undisturbed material.

**Activity zones**

The site preserves twelve distinct activity zones (Fig. 3) of which eight contain the processing of lithic raw materials partially in spatial correlation to a hearth feature. Two include a gravel pavement in combination with a hearth feature and three additional artefact concentrations contain one singular hearth, one gravel pavement without associated finds and another under which fragmented faunal remains could be uncovered. Structurally, the southernmost concentration (activity zone III) is the largest and most diverse recovered on site and thus likely represents the major focus of settlement activities. Most of the other artefact concentrations represent short-term and specialised activities, often connected to hafting and retooling. Multiple refits and the representation of debitage from a single nodule in different activity zones suggest total contemporaneity of the recovered artefact concentrations. Apart from the, so far, singular gravel pavements, Wesseling yields an additional unique feature, which is the processing and geometric shaping of brown coal. These small shaped pieces of brown coal and their associated production debris were found in spatially distinct areas (Fig. 7) in the western part of the occupation and may be connected to personal adornment and art.



Fig. 1. Location of Wesseling.  
 Abb. 1. Lage von Wesseling.