

MIDDLE PALEOLITHIC SUBSISTENCE IN THE CENTRAL RHINE VALLEY

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Summary

Excavations in the central Rhine Valley provide evidence for diversified subsistence practices during the Middle Paleolithic. The present research strategy targets thick, fine-grained sedimentary sequences which allow the recovery of much contextual information and provide excellent prospects for paleoenvironmental reconstruction. Thus far, examples of monospecific exploitation of horse and bovid have been documented at Tönchesberg and Wallertheim, and examples of diversified faunal assemblages with bovids, equids and cervids well-represented have been documented at Tönchesberg. Current excavations in Wallertheim show considerable promise for reconstructing Middle Paleolithic subsistence, but results must await the completion of the excavation.

Résumé

Subsistance au Paléolithique moyen dans le cours moyen du Rhin.

Les fouilles archéologiques dans le cours moyen de la vallée du Rhin témoignent de pratiques de subsistance diversifiées au cours du Paléolithique moyen. La stratégie de notre recherche vise de longues séquences à sédimentation fine qui permettent de récupérer une importante information contextuelle et fournissent d'excellentes perspectives pour les reconstructions paléo-environnementales. À ce jour, des exemples d'exploitation monospécifique du cheval et des bovidés sont connus à Tönchesberg et Wallertheim, et des exemples d'assemblages fauniques diversifiés avec bovidés, équidés et cervidés bien représentés ont été documentés à Tönchesberg. Les fouilles en cours à Wallertheim sont extrêmement prometteuses pour reconstituer la subsistance au Paléolithique moyen mais il faut attendre la fin des fouilles pour obtenir des résultats.

Zusammenfassung

Mittelpaläolithische Subsistenz am Mittelrhein.

Ausgrabungen am Mittelrhein erbrachten Hinweise auf verschiedenartige Varianten der Subsistenz während des Mittelpaläolithikums. Die Untersuchungen zielen auf mehrschichtige, feinsedimentierte Fundstellen ab, welche die Aufdeckung in situ liegender Straten erlauben und zugleich hervorragende Möglichkeiten zur Rekonstruktion der damaligen Umwelt bieten. Bis heute ist die monospezifische Jagd auf Pferd und Wisent in den Fundstellen Tönchesberg und Wallertheim belegt, während in Tönchesberg auch diversifizierte Inventare, in denen Boviden, Cerviden und Equiden gleich gut repräsentiert sind, nachgewiesen werden konnten.

Die laufenden Grabungen in Wallertheim lassen wichtige Informationen über die mittelpaläolithische Wirtschaft erhoffen.

Key Words

Neanderthals, Subsistence, Middle Paleolithic, Open air sites, Fauna.

Mots clés

Néandertal, Subsistance, Paléolithique moyen, Sites de plein air, Faune.

Schlüsselworte

Neandertaler, Subsistenz, Mittelpaläolithikum, Freilandstationen, Fauna.

During the last two decades critical examination of the data available for the reconstruction of Paleolithic subsistence has repeatedly shown that much faunal material recovered from sites could not be directly attributed to the hominid hunting. In many cases assemblages assumed to be archaeofauna have been shown to be primarily composed of materials accumulated independently of hominid activities. Thanks to this period of heated scientific debate, analysts studying the archaeology of pre-modern hominids

must now demonstrate that hominids were responsible for faunal material recovered from archaeological sites, before they can attempt to reconstruct the subsistence practices of extinct hominids.

This paper summarizes some of the evidence beginning to emerge from several excavations that have deliberately sought to recover faunal material from find horizons with much contextual information. Instead of seeking deposits rich in faunal material, the research strategy tar-

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gets stratigraphic sequences which are as complete as possible and contain low energy sediments that accumulated with relatively rapid average rates of sedimentation. This perspective assumes that taphonomically simple sites offer much better chances of retrieving information relevant for reconstructing Middle Paleolithic behavior. The biggest problems with this strategy are first locating the appropriate geological setting and then having the resources and perseverance needed to conduct large scale excavations.

In the Rhine Valley crews under the author's direction have been excavating the sites of Tönchesberg, Wallertheim and Metternich since 1987 (fig. 1). Each site is in a different topographical position in the landscape: Metternich on a terrace of the Mosel; Tönchesberg atop a volcanic mountain in the East Eifel; and Wallertheim on the floodplain of the Wiesbach in Rheinhessen. These three localities preserve remarkably complete stratigraphic sequences for the last interglacial-glacial cycle, and are key localities for documenting the paleoenvironmental history of the region. The Upper Pleistocene sequence from the sites ranges in thick-

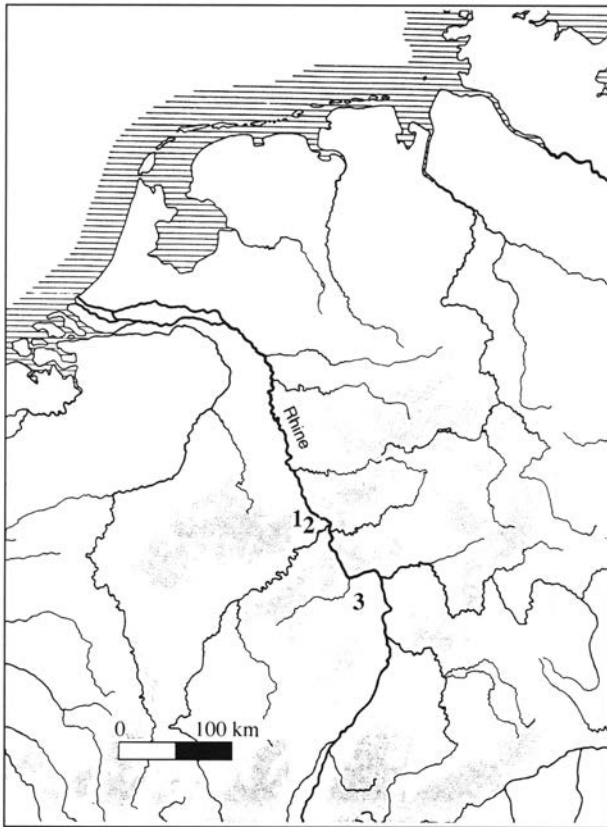


Fig. 1: Map showing the location of Middle Paleolithic sites in the Central Rhine Valley.

1- Tönchesberg. 2- Metternich. 3- Wallertheim.

ness from 15-30 m at the three locations, and each of the sites has numerous fossiliferous horizons.

So far excavations at the sites have uncovered 13 new Middle Paleolithic horizons and Wallertheim is also well-known for Otto Schmidtgen's main find horizon excavated in the late 1920s (Schmidtgen and Wagner, 1929). Of the 14 find horizons, 12 have produced faunal material. Several find horizons in Tönchesberg and Wallertheim are noteworthy in the present discussion, but much work is needed at Metternich before any conclusions can be drawn from the excavations there.

Although the analysis of the materials from the more recent excavations has not yet progressed to such an extent that a final interpretation for each find horizon is possible, a pattern already starting to emerge shows a great diversity among the faunal assemblages.

Two find horizons show evidence for monospecific prey species. The richer of the two is the main find horizon excavated by Schmidtgen in Wallertheim, which produced several thousand faunal specimens, including the remains of at least 52 individual bison. Although the excavation took place nearly seven decades ago, Schmidtgen was a paleontologist and saved all faunal material from the excavation. The thoroughness of the excavation makes the assemblage more informative than materials from many more recent excavations where highly selective procedures for faunal recovery were practiced. The majority of bison represented was of prime age at the time of their death, and a comprehensive reanalysis of the collection by Gaudzinski (1992) has confirmed Schmidtgen's interpretation that the find horizon preserves the remains of a kill and butchery site, where Neanderthals repeatedly hunted bison on the marshy flood plain of the Wiesbach. The find horizon correlates with the initial cool climatic phase after the Eemian interglacial and probably dates to between 110,000 and 115,000 yr. bp.

The youngest find horizon at Tönchesberg, Tö1B, provides another example of a monospecific assemblage (Conard, 1992). Here the remains of five juvenile horses represent 73% of the assemblage and appear to be an archaeofauna, while much less numerous remains from other species are probably part of a background fauna (tab. 1). Patterns of dental eruption indicate that four of the horses were under one year old, and the fifth was between ten months and three years of age at the time of their deaths. Both spring and fall/winter deaths are represented in the assemblage. All of the horses were too young to have joined bachelor herds and were probably hunted from family herds, perhaps being more vulnerable due to their young age. Here cranial remains and long bones are well-repre-

Table 1: Identified faunal remains from Tö1B. Numbers in parentheses indicate the count after refittingting.

	NISP	MNI
<i>Equus</i> sp.	83 (76)	5
<i>Cervus elaphus</i>	17	1
<i>Rangifer tarandus</i>	9	1
<i>Coelodonta antiquitatis</i>	3	1
<i>Equus hydruntinus</i>	2	1
	114 (107)	

Table 2: Identified faunal remains from Tö1A-Upper lava-loess. Numbers in parentheses indicate the count after refittingting.

	NISP	MNI
<i>Cervus elaphus</i>	101 (99)	4
<i>Equus</i> sp.	49	2
<i>Bos/Bison</i>	38	2
<i>Rangifer tarandus</i>	8	1
Caprid (small)	5	2
<i>Coelodonta antiquitatis</i>	3	1
<i>Felis leo</i>	2	1
<i>Equus hydruntinus</i>	1	1
<i>Canis lupus</i>	1	1
<i>Meles meles</i>	1	1
Aves	1	1
	210 (208)	

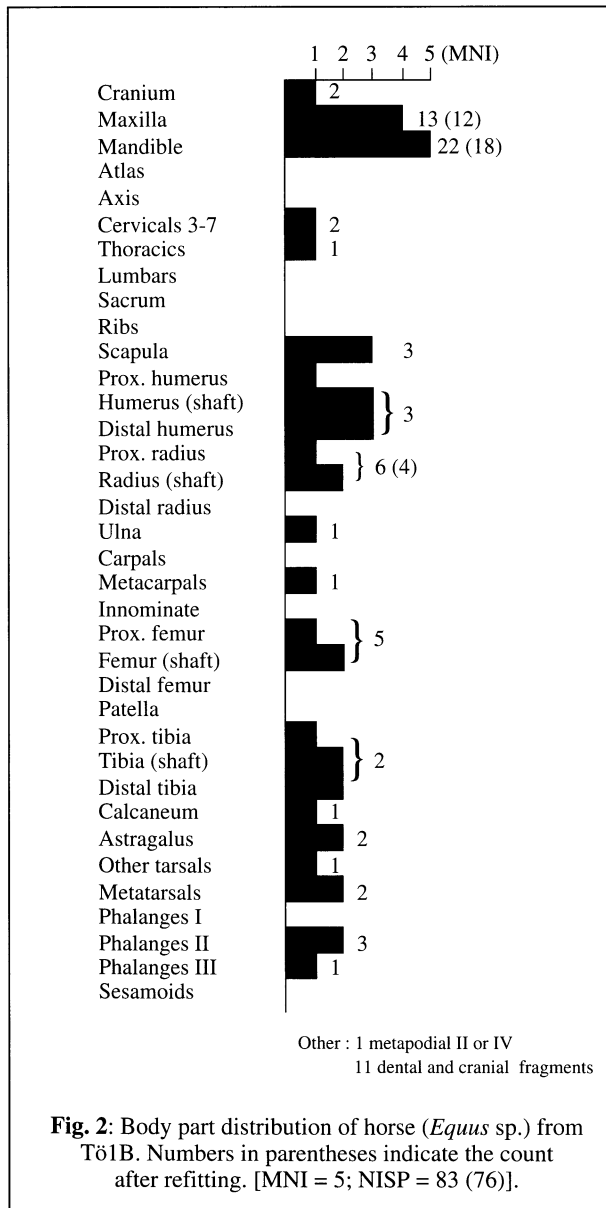


Fig. 2: Body part distribution of horse (*Equus* sp.) from Tö1B. Numbers in parentheses indicate the count after refittingting. [MNI = 5; NISP = 83 (76)].

sented (fig. 2). Compared to other find horizons at Tönchesberg the bones show less intensive cracking for marrow. This find horizon dates to about 65,000 yr. bp and belongs to a period of loess sedimentation after the formation of the stratified humic horizons during the early Weichselian.

While a Saalian find horizon at Tönchesberg, Tö1A upper lava-loess, produced a rich faunal assemblage dominated by remains of horse, large bovid and red deer (tab. 2), the reworked contexts of the finds makes a definitive interpretation difficult (Conard, 1992). The abundance of upper limb bones and parts of the carcass rich in fat, meat and marrow suggests either early access to carcasses or hunting (fig. 3). The highly fragmented long bones suggest intense exploitation of marrow. As is nearly always the case at such sites, it is difficult to rule out the possibility that bone crushing carnivores may have contributed significantly to formation of the find horizon. Limited evidence from annual cementum studies conducted by A. Burke and A. Pike Tay indicate fall and early winter deaths of two adult red deer and a single spring death of a horse present in the assemblage. Interestingly, a paleontological accumulation in a nearly identical context, the Tö1A lower lava-loess, shows a very different pattern in which nearly whole carcasses of horses are present (tab. 3; fig. 4). Annual cementum from this layer identified an 8-12 year old red deer that died in the spring and a horse that died in the winter. A portion of these winter and spring deaths could have been the result of nutritional stress.

Tönchesberg 2B provides a convincing example of diversified hunting during the initial cooling after the Eemian interglacial about 115,000 yr. bp (Conard, 1992). Here well-preserved remains of large bovid, red deer and horse are present within a find horizon containing lithic scatters and burnt lithic and faunal material that is probably

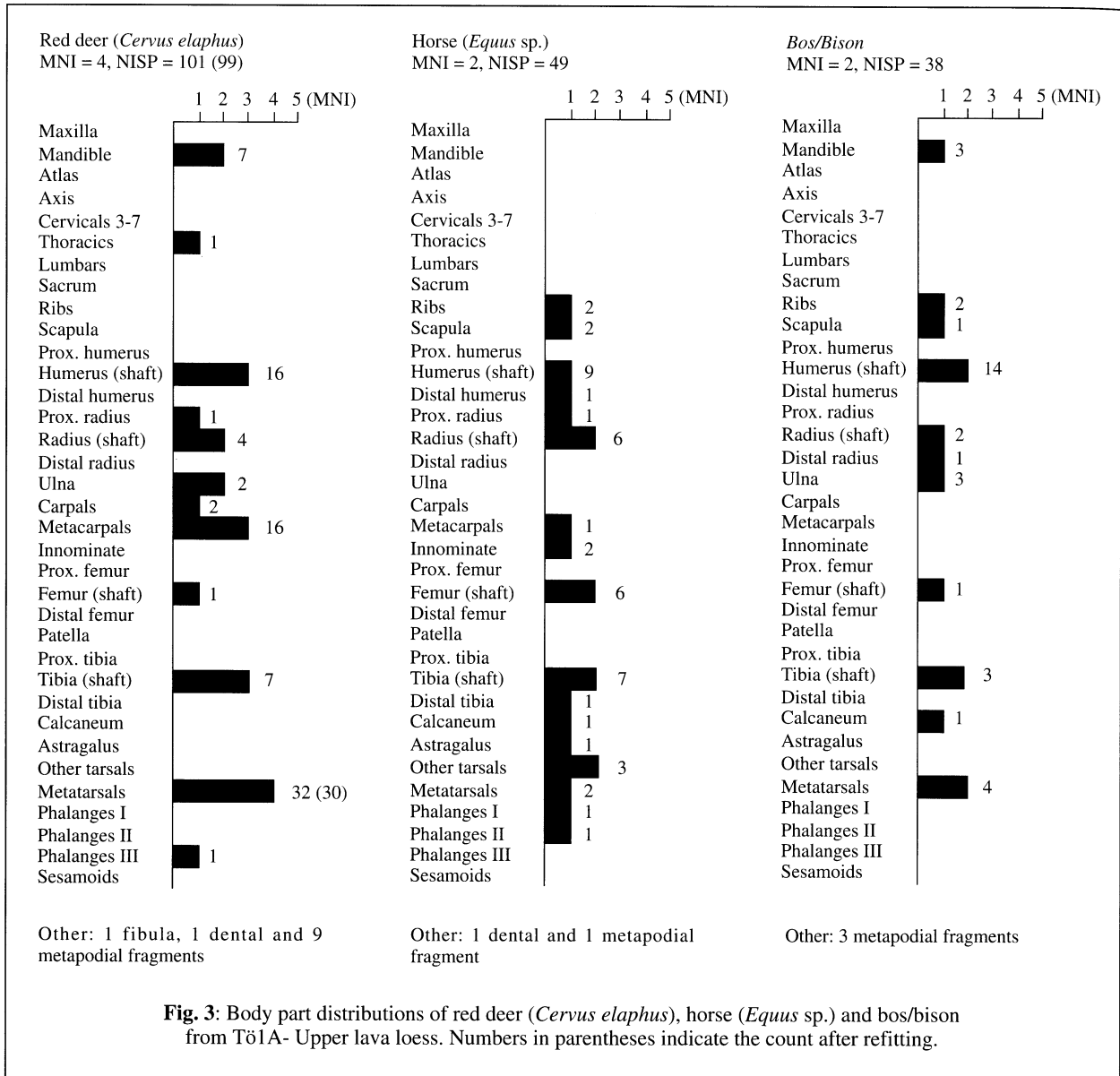


Table 3: Identified faunal remains from Tö1A - Lower lava-loess. Numbers in parentheses indicate the count after refitting.

	NISP	MNI
<i>Equus sp.</i>	40 (39)	3
<i>Cervus elaphus</i>	9	1
<i>Bos/Bison</i>	4 (3)	1
<i>Rangifer tarandus</i>	3	1
<i>Coelodonta antiquitatis</i>	2	1
<i>Felis leo</i>	1	1
<i>Vulpes vulpes</i>	1	1
	60 (58)	

the remains of a hearth (tab. 4; fig. 5). Unlike Tö1B here all of the long bones of red deer and horse and the great majority of the bovid long bones have been broken to extract marrow. Many of the faunal fragments can be refitted and several finds show impact fractures that almost certainly resulted from deliberate bone cracking by hominids. The same find horizon also produced four hammerstones and a flat pieces of quartzitic slate that could have served as an anvil. The assemblage of horse bones is dominated by upper limb bones and entirely lacks cranial remains or parts of the axial skeleton. The faunal elements of red deer also show an over representation of upper limb bones and an under representation of all other skeletal regions. This

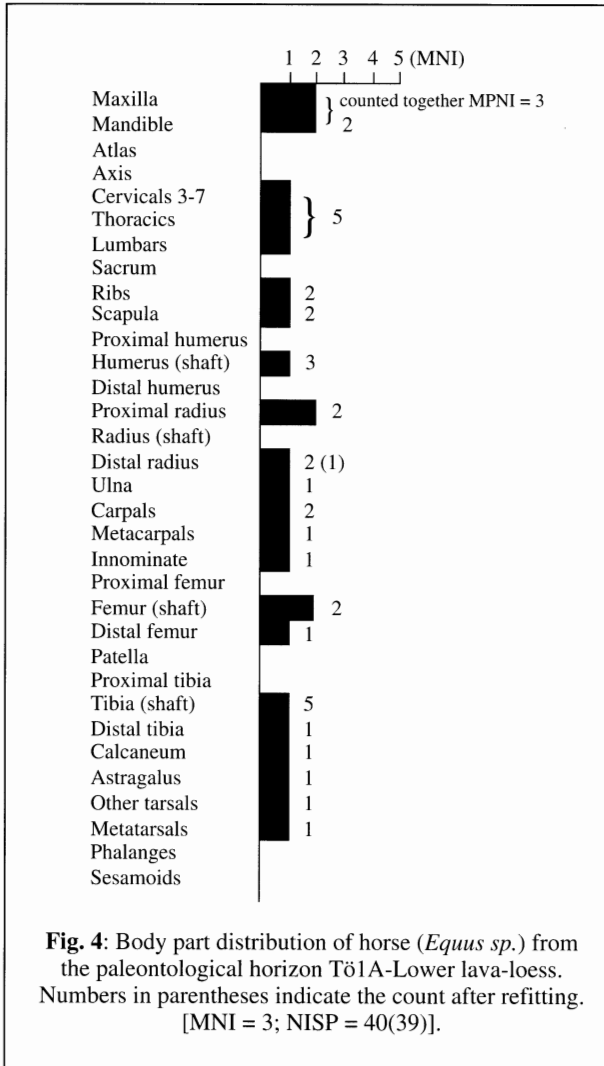


Table 4: Identified faunal remains from Tö2B. Numbers in parentheses indicate the count after refitting. * This figure is derived from the 110 bases of antlers which are more than 50% complete.

	NISP	MNI
<i>Bos primigenius</i>	56 (50)	4
<i>Cervus elaphus</i> (not including shed antlers)	32 (25)	3
<i>Cervus elaphus</i> (shed antlers only)	574	55 pairs*
<i>Equus sp.</i>	27 (21)	2
<i>Vulpes vulpes</i>	21	1
<i>Dicerorhinus hemitoechus</i>	9	1
<i>Dama dama</i>	4	2
<i>Lynx lynx</i>	5	1
<i>Equus hydruntinus</i>	1	
<i>Hyaenidae</i> indet.	1	1
	730 (711)	

pattern suggests that the occupants of the site killed or at least had early access to the carcasses of these animals and transported the desired faunal elements to Tö2B for processing and consumption. The only evidence for seasonality comes from a cementum analysis of a three or four year old red deer that died in fall or winter.

The 13 months of digging at Wallertheim (Conard *et al.*, 1994) in an area roughly sixty meters south of Schmidtgen's excavation have produced rich faunal assemblages from six find horizons dating to the last interglacial and the early part of the last glaciation. While I am not prepared to offer interpretations of these find horizons until the fieldwork and analysis of the materials is complete, the new collections from Wallertheim promise to provide much information related to Neanderthal subsistence. Four of the find horizons are partially *in situ* and include numerous refitted lithic and faunal remains as well as finds in anatomical position. Within the *in situ* deposits it should be possible to determine what portion of the assemblage is an archaeofauna, and in several cases observations in the field and laboratory suggest that much of the fauna is refuse from hominid subsistence practices.

Find horizon A at Wallertheim includes highly concentrated burnt faunal material that may be the remains of a hearth and preserves areas where faunal remains of large bovid, horse and *Dama dama* are closely associated with rich lithic scatters.

Find horizon D preserves a diverse fauna dominated by horse and large bovid in close association with a rich lithic assemblage in which points are abundant. Here a cursory look at the faunal identified cut marks on a horse pelvis.

Wallertheim find horizons E and F have produced the richest faunal assemblages from the new excavations. Horizon E includes the remains of several adult bovids that either died naturally or were killed on the banks of the Wiesbach. Both faunal and botanical preservation in this horizon is outstanding, and, in addition to the abundant faunal remains, specimens of unburnt grasses and leaves have been recovered. As was the case with Schmidtgen's excavation, rich lithic scatters are absent from this layer. Find horizon F preserves over 1,100 faunal remains, of which roughly 80% of the identified elements are of horse. Preliminary results from annual cementum studies of horse dentition suggest that remains from late summer deaths are included in the faunal assemblage. This horizon produced a small lithic assemblage including several retouched forms, but lacked dense lithic scatters. These two find horizons differ from horizons A and D in that they represent actively used land surfaces on the Wiesbach flood plain, but are not actual occupations as is the case with horizons A and D.

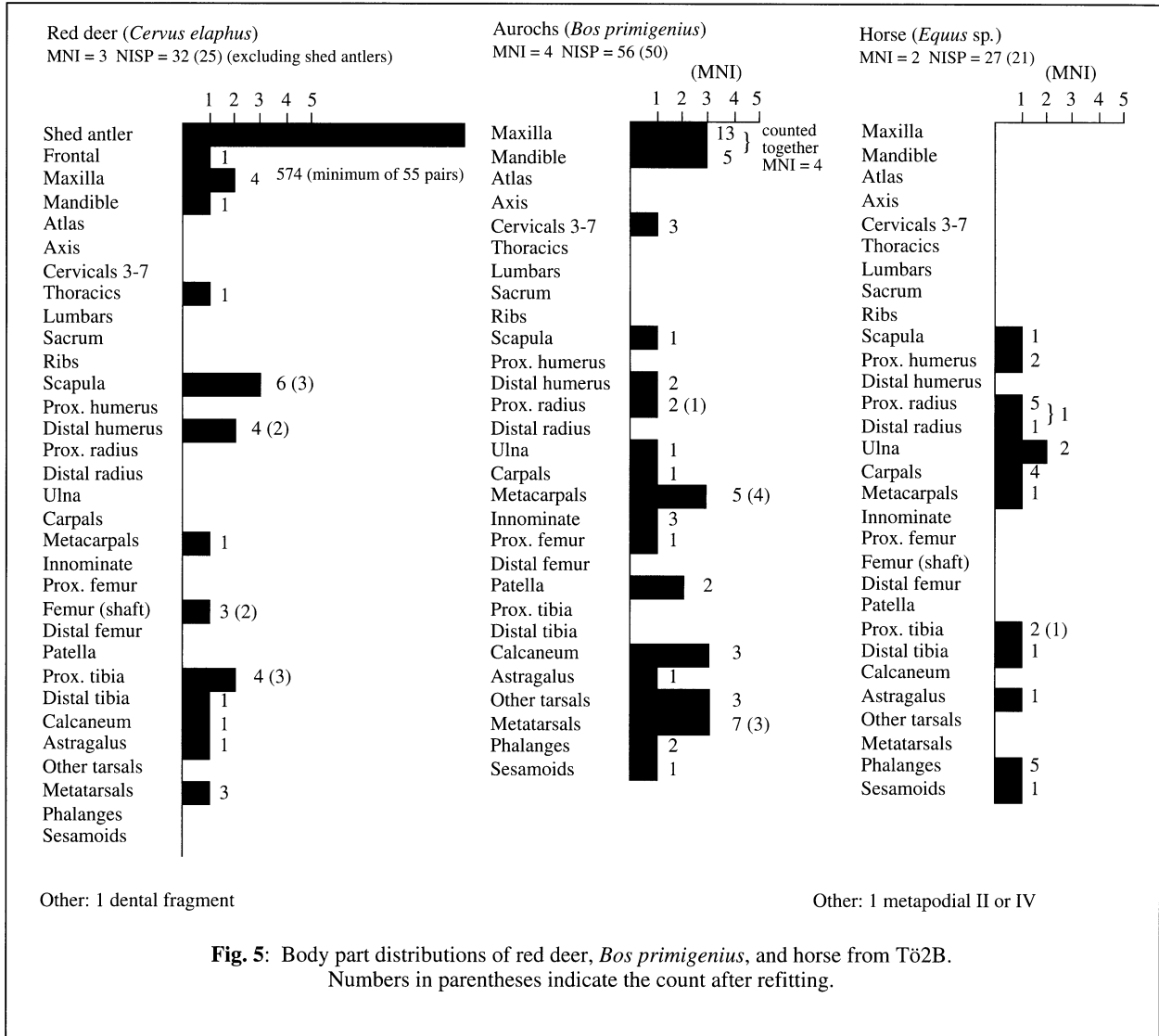


Fig. 5: Body part distributions of red deer, *Bos primigenius*, and horse from Tö2B. Numbers in parentheses indicate the count after refitting.

Find horizons E and F probably date to the first climatic amelioration after the Eemian interglacial.

While early access scavenging could have contributed to the formations of the faunal collections mentioned above, the lithic assemblages provide additional support for the interpretation that much of the faunal material from Tönchesberg and Wallertheim is the result of hunting. Several of the find horizons, most notably Tö2B and Wal. D include a variety of point forms whose morphology can be best explained as hunting implements (fig. 6).

In summary, current research is beginning to reconstruct the subsistence strategies used by Middle Paleolithic hominids during recent glacial cycles in the Rhineland. Sites excavated in the last decade from low energy sedimentary environments and correlating with interglacial

conditions, along with mild and cold phases of the last glacial cycle show that Middle Paleolithic hominids practiced diverse subsistence strategies ranging from large and small scale monospecific exploitation of bison and horses to more diversified hunting strategies that produced find horizons including remains from multiple prey species.

Although current research is beginning to provide the high quality data needed to reconstruct hominid behavior, much more fieldwork, laboratory analysis and model building is needed before we shall be able to document and understand the behavioral systems of Neanderthals and ultimately address the question of how human the most recently extinct members of the hominid lineage were. This research needs to concentrate on a detailed study of assemblages from excellent stratigraphic and taphonomic contexts, where accu-

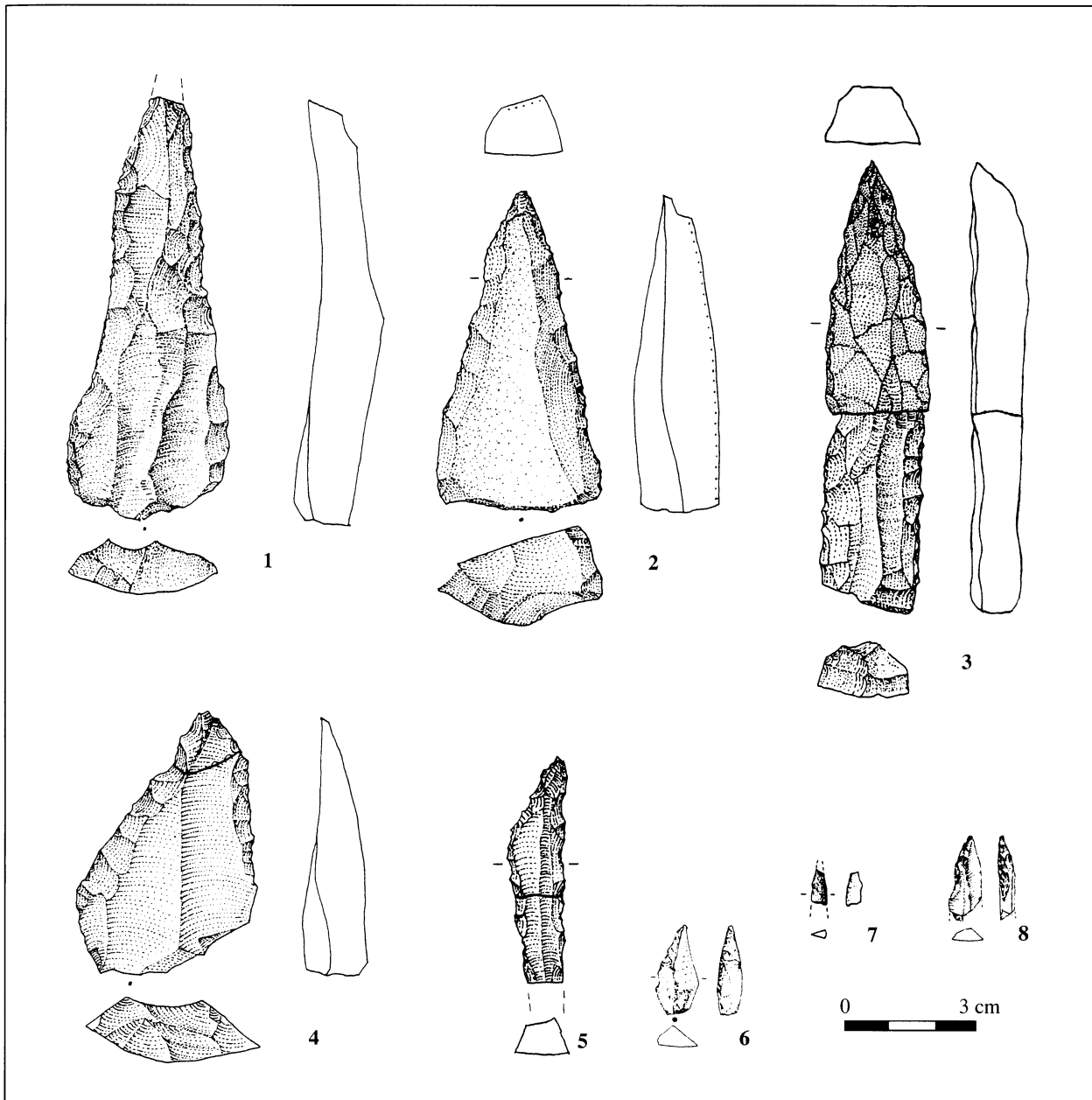


Fig. 6: Middle Paleolithic points presumed to have been used for hunting.

1. Elongated point, quartzite, Wallertheim C.
2. Steeply retouched point, quartzite, Wallertheim D.
3. Elongated steeply retouched point, rhyolite, Wallertheim D.
4. Point with refitted tip, andesite, Wallertheim D.
5. Refitted, backed point, rhyolite, Wallertheim D.
6. Small, backed point, Tertiary quartzite, Tönchesberg 2B.
7. Tip of small backed point, Tertiary quartzite, Tönchesberg 2B.
8. Tip of small backed point, siliceous slate, Tönchesberg 2B.

rate environmental reconstructions are possible and seasonality data are accessible.

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Bibliography

- CONARD N. J., 1992.– *Tönchesberg and its position in the Paleolithic Prehistory of Northern Europe*. (*Römisch-Germanisches Zentralmuseum Monograph*, 20). Bonn : Habelt Verlag.
- CONARD N. J., ADLER D. S., FORREST D. F. and KASZAS, P. J., 1994.– Current Middle Paleolithic excavations in Wallertheim, Rheinhessen. Bilzingsleben V Colloquium, Jena. *Enthnographisch-Archaeologische Zeitschrift*, 35 : 81-87.
- GAUDZINSKI S., 1992.– *Wisentjäger im Wallertheim : zur Taphonomie einer mittelpaläolithischen Freilandfundstelle in Rheinhessen*. Doctoral dissertation, University of Cologne.
- SCHMIDTGEN O. and WAGNER W., 1929.– Eine altpaläolithische Jagdstelle bei Wallertheim in Rheinhessen. *Notizblatt des Vereins für Erdkunde und der Hessischen Geologischen Landesanstalt zu Darmstadt*, 11 : 1-3.
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