Subscription Information

Mesolithic Miscellany appears twice a year, in May and November, as an informal communication among individuals interested in the European Mesolithic. The yearly subscription rates for individuals are: North America – US$4.00, Europe – GB£2.50; and for libraries/other institutions – GB£3.00. The subscription covers printing and mailing costs only. European subscribers can take out a 5-year subscription for £10, and should send payment to the editor, Clive Bonsall. North American subscribers should send their subscriptions to Douglas Price, Department of Anthropology, University of Wisconsin, Madison, WI 53706, USA. Individuals for whom currency exchange may be difficult should contact Clive Bonsall at the address above. Subscriptions for 1995 are due now.

From the Editor

If you enjoy reading about the work of others, chances are they will enjoy reading about yours. *Mesolithic Miscellany* publishes research reports, book reviews, national synopses of recent excavations and research, statements for debate, conference summaries, important radiocarbon dates, announcements, and summaries or abstracts of recent publications to inform readers of current developments in the field. Recent Publications is a category that is particularly important and particularly difficult to keep up-to-date. Reprints or simple citations of your work would be most useful. Please prepare a brief abstract of the article or publication if one is not included in the text. We always need more reports, reviews and papers from you, the reader.

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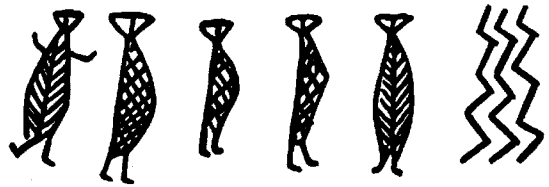
ISSN 0259-3458



November 1995

Mesolithic Miscellany

Volume 16 Number 2

Editorial

Before you is a 'bumper' issue of *Mesolithic Miscellany* which contains two research reports that should be of interest to many subscribers. The first deals with the Mesolithic and Early Neolithic faunas from current excavations at Schela Cladovei in the lower Danube Valley in Romania, and offers comparisons with other sites in the Iron Gates region; Schela Cladovei can be compared archaeologically with the better known sites of Lepenski Vir and Vlasac, but differs from those sites in its environmental setting. The second paper is concerned with the recent excavation of an Early Mesolithic site in the southeastern Netherlands, where a new experimental method of excavation was applied — with interesting results!

Recent issues of *Mesolithic Miscellany* have contained a lot of important information about research in progress which, I hope, will persuade more of you to contribute to the newsletter. I am now seeking contributions for volume 17, the first issue of which is due for publication next May.

Finally, it is with great sadness that I have to report the death a few weeks ago of Professor Grahame Clark who did so much for Mesolithic studies.

Clive Bonsall

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Schela Cladovei: a preliminary review of the prehistoric fauna

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In memoriam Alexandra Bolomey

Introduction

Archaeozoological research carried out in conjunction with the rescue excavations that preceded construction of a hydro-electric installation in the Iron Gates Gorge of the River Danube began in 1965. Dr Alexandra Bolomey published a summary of both the landscape and its prehistoric economy from an archaeozoological point of view, with emphasis on finds from the Romanian side of the river (Bolomey 1973). The parallel evaluation of animal bones from the Serbian side is highlighted by faunal research at the Mesolithic sites of Lepenski Vir (Bökönyi 1970) and Vlasac (Bökönyi 1978*a*).

Within this geographical area and time frame, the excavations at Schela Cladovei represent an important link between the Mesolithic and Neolithic periods. The site is located on the first terrace of the Danube, some 7km below the exit from the gorge. Throughout the greater part of the Holocene it was situated at the edge of an extensive floodplain, in contrast to the canyon-like setting of the other Iron Gates sites whose fauna has been studied (*Figure 1*). The major cultural horizons identified relate to the Late Mesolithic Schela Cladovei–Lepenski Vir culture and the Early Neolithic Starčevo–Criş culture (Boroneanţ *et al.*, in press).

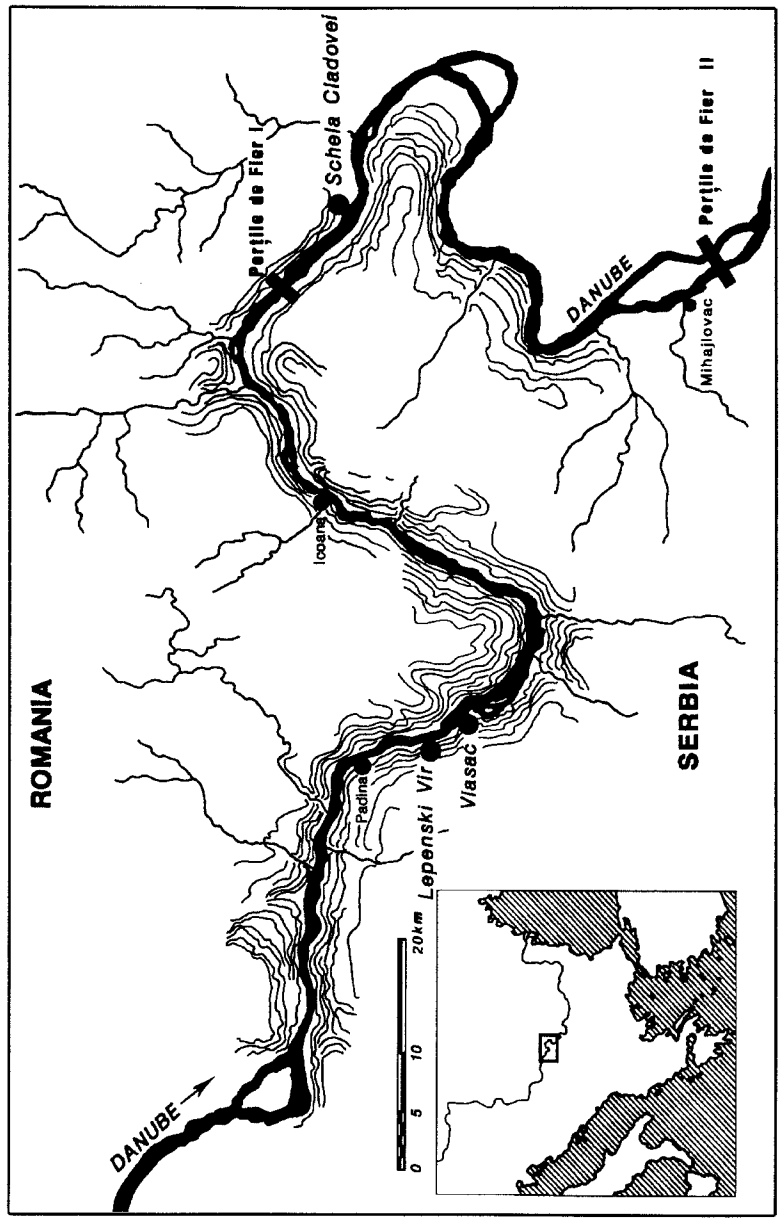

Figure 1 Map of the Iron Gates gorge showing the locations of sites mentioned in the text.

This paper is concerned with the evaluation of these two prehistoric periods at the site. From a methodological point of view, a special feature of Schela Cladovei is that for the first time in the Iron Gates region, water-sieved samples are available for the study of prehistoric fishing.

Animal bone assemblages retrieved using different recovery methods are usually difficult to compare. Inter-site comparisons between the collections from Schela and those recovered purely by hand from earlier excavations need to take account of the potential biases inherent in the selectivity of the different recovery methods employed, but it is hoped that the Schela material can form the base point for all future comparative studies. Access to a major body of water, and the levels that the water usually attained, may have been important considerations regarding the location or situation of a prehistoric settlement for a variety of reasons including transport and water supply, and local ground surface as well as vegetation conditions, but it seems clear that the acquisition of fish as a source of animal protein may also have been a primary concern (Bolomey 1973:45; Bonsall 1981:458).

Material and methods

The faunal remains discussed in this paper were excavated in 1992–1994 from two small trenches, Area IIIa and Area VI (*Figure* 2; Boroneanţ *et al.*, in press).

Remains of Mesolithic and Neolithic occupations in these areas comprise mainly sunken features, representing graves and various kinds of pits (rubbish pits, bases of dwellings, etc.). Their stratigraphic relationships are quite complex. There are no Mesolithic or Neolithic 'layers' *per se*. Archaeological features of differing ages occur within the A- and B horizons of a calcareous brown earth soil developed in Early Holocene alluvial sediments. The outlines of the features are often indistinct, 'blurred' by soil forming processes. Mesolithic and Neolithic contexts are often affected by later disturbances – thus, Mesolithic contexts are frequently truncated by Neolithic features, and Neolithic contexts by other Neolithic or later features. The attribution of features to the Mesolithic or Neolithic is provisional, and in most cases is based mainly on artifact inventories — *e.g.* presence/absence of pottery, and character of lithic or bone artifacts. Radiocarbon dates are only available for a series of Mesolithic burials in Area III (Boroneanţ *et al.*, in press). Some mixing of materials between contexts is likely to have occurred,

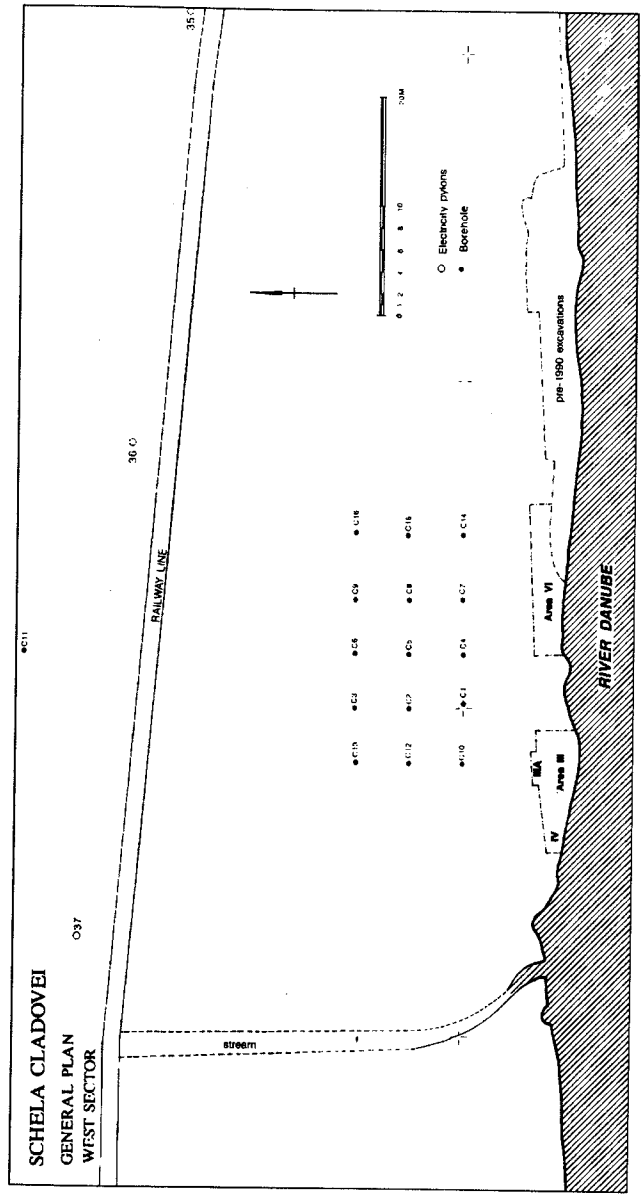

Figure 2 Plan of part of the Schela Cladovei site showing the locations of the areas under investigation in 1992–1994 (after Boroneanţ et al., in press).

as a result of bioturbation (root action, activities of earthworms and other burrowing animals), human disturbance, and inaccuracies of excavation.

A special feature of the Schela Cladovei material is the relatively broad spectrum of fish (especially small *Cyprinidæ*) whose often small bones could only have been recovered using water sieving. Hand-collection tends to be very size selective, and even in the case of precise gathering, bones of small species tend to be under-represented or absent. Bone splinters shorter than 18mm have a 95% chance of being overlooked during excavation if no form of sieving is practised (Bartosiewicz 1983:42).

In this interim report some discrepancy exists between interpreting data gathered by the two types of recovery. Zoological evaluation is still in progress. Identification of water-sieved samples is extremely time consuming, and proceeds much more slowly than that of the larger, hand-collected materials. Whereas all the hand-collected material from the 1992–94 excavations has been examined, as yet only a proportion of the water-sieved material has been analyzed. And so it is not possible to make direct comparisons of sieved and non-sieved components for all the contexts studied. For this reason mammal and fish remains have been treated separately in the tables in this study. Although several large fish bones were recovered by hand, and a few mammal bones were found in sieved samples, this taxonomic sub-division corresponds more or less to the difference in the two techniques of recovery.

Eventually, however, it should be possible to assess directly the relative roles of smaller and larger species (especially of fish) in terms of their contributions to diet at different periods in the occupation of the site. Additional aspects of research include the reconstruction of methods most suitable for their capture and the habitats that may have been exploited.

Throughout this paper, bones are reported in terms of the number of identifiable bone specimens (NISP). This form of quantification was augmented using bone weights in order to assess the degree of fragmentation in the material. In view of the high degree of fragmentation and the subjective bias involved, no calculation of minimum numbers of individuals (MNI) was attempted at this stage of research.

The few bones of birds and the remains of land and freshwater molluscs recovered have not been included in this study.

Results and discussion

Mammal remains from the two major chronological components at this site are presented in *Tables 1 & 3*, while fish remains are summarized in *Tables 2 & 4*. The small and possibly mixed contingent of animal remains from Dacian period (Iron Age) contexts have not been included in this study.

Mesolithic animal remains

There are 755 identifiable bone specimens (NISP) from Mesolithic features. These are dominated by the remains of red deer (*Cervus elaphus* L. 1758; 9.8% bone and 4% antler in terms of NISP) and Suids (7.6% of NISP). These are considered to represent various size and age classes of probable wild pig (*Sus scrofa* L. 1758), although the presence of domestic pigs (*Sus domesticus* Erxl. 1777) cannot always be recognized on the basis of osteological evidence alone. Only adult bones can be assessed regarding size ranges of wild versus domestic pigs. About half of the pig bones (3.9% of NISP) are from large, mature individuals that are thought to be wild animals on the assumption that early domestic pigs are unlikely to have attained an extremely large size, but the inclusion of some domestic pigs in the 'wild' category cannot be ruled out.

Similarly, entries of domestic pig in *Table 3* may include small individuals of the wild ancestor as well. No diagnostic skeletal features (lacrimal bone, complete toothrows) were available in the material to facilitate distinction on a purely morphological basis.

The very small (2.5% of NISP) contributions by Bovines correspond to the low frequency noted by Bolomey (1973:49). No Bovine bones were identified in the Pre-Neolithic assemblages from Lepenski Vir (Bökönyi 1969:158) and they occurred only sporadically at Vlasac (Bökönyi 1978*a*:36) and in the Mesolithic assemblage from Padina (Clason 1980:160). In the heavily fragmented material from Areas IIIa and VI at Schela Cladovei it was not possible to recognize bones of bison (*Bison bonasus* L. 1758), a game animal that may have resided in the surrounding hilly habitat during prehistoric times. However, Postglacial occurrences of bison are known from Bronze Age lake dwellings in the Ljubljana Moor, a large boggy area surrounded by hills (Bartosiewicz 1994). The more open landscape east of the Iron Gates gorge may also have favoured the presence of aurochs (*Bos primigenius* Boj. 1827).

Table 1 Provisional list of Mesolithic animal remains from Schela Cladovei (1992–94).

Species		NISP (n)	(%)	Weight (g)	(%)	Mean weight (g)
Aurochs	(*Bos primigenius* Boj. 1827)	6	0.8	249.7	5.0	41.6
Red deer	(*Cervus elaphus* L. 1758)	75	9.8	1988.7	39.4	26.5
Red deer antler		31	4.0	558.4	11.1	18.0
Roe deer	(*Capreolus capreolus* L. 1758)	19	2.5	68.3	1.4	3.6
Roe deer antler		2	0.4	9.4	0.2	4.7
Wild pig	(*Sus scrofa* L. 1758)	29	3.9	549.4	10.9	18.9
Brown hare	(*Lepus europæus* Pall. 1778)	4	0.8	7.9	0.2	2.0
Cattle	(*Bos taurus* L. 1758)	13	1.7	221.0	4.4	17.0
Sheep	(*Ovis aries* L. 1758)	3	0.7	17.7	0.4	5.9
Sheep/Goat	(*Caprinae*)	43	5.6	74.3	1.5	1.7
Pig	(*Sus domesticus* Erxl. 1777)	28	3.7	123.5	2.4	4.4
Dog	(*Canis familiaris* L. 1758)	7	0.9	26.3	0.5	3.8
Badger	(*Meles meles* L. 1758)	2	0.3	25.7	0.5	12.8
Wolf	(*Canis lupus* L. 1758)	3	0.7	23.7	0.5	7.9
Greek tortoise	(*Tortuga græca* Boulanger)	23	3.0	58.6	1.2	2.5
Sturgeon sp.	(*Acipensiderae*)	110	14.4	626.2	12.2	5.7
Sterlet	(*Acipenser gentilis* L. 1758)	13	1.7	12.4	0.2	1.0
Catfish	(*Siluris glanis* L. 1758)	16	2.2	88.9	1.8	5.6
Pike	(*Esox lucius* L. 1758)	5	0.6	3.7	0.1	0.7
Carp	(*Cyprinus carpio* L. 1758)	175	22.8	219.0	4.3	1.3
Bream	(*Abramis brama* L. 1758)	7	0.9	4.4	0.1	0.6
Orfe	(*Leuciscus idus* L. 1758)	1	0.1	0.2	0.2	0.2
Small cyprinid	(*Cyprinidae*)	135	17.7	61.9	1.2	0.5
Other identifiable	(*Varia*)	5	0.8	15.1	0.3	3.0
Total identifiable		**755**	**100.0**	**5034.4**	**100.0**	
Large mammal	(*Mammalia* indet.)	159		616.5		3.9
Small mammal	(*Mammalia* indet.)	114		120.5		1.1
Fish indet.	(*Pisces*)	109		22.9		0.2

Table 2 Mesolithic fish bone recovered by water sieving (preliminary results).

Species		NISP (n)	(%)	Weight (g)	(%)	Mean weight (g)
Sterlet	(*Acipenser gentilis* L. 1758)	46	31.1	23.0	24.7	0.5
Catfish	(*Siluris glanis* L. 1758)	3	2.0	3.9	4.2	1.3
Pike	(*Esox lucius* L. 1758)	2	1.4	1.0	1.1	0.5
Carp	(*Cyprinus carpio* L. 1758)	64	43.2	57.0	61.1	0.9
Bream	(*Abramis brama* L. 1758)	18	12.2	3.6	3.8	0.2
Orfe	(*Leuciscus idus* L. 1758)	9	6.1	1.8	1.9	0.2
Barbel	(*Barbus barbus* L. 1758)	6	4.0	3.0	3.2	0.5
Total identifiable		**148**	**100.0**	**93.3**	**100.0**	
Small cyprinid	(*Cyprinidae*)	276		55.2		0.2
Fish indet.	(*Pisces*)	872		174.4		0.2

The sporadic presence of sheep or/and goat (*Caprinae* Gill 1872) bones in this early assemblage is probably due to contamination of the Mesolithic sample by material from later periods (see above). It should be noted, however, that Radulesco & Samson (1962) argued for the Mesolithic domestication of sheep in Dobrogea (eastern Romania). However, the apparent absence of the wild ancestor of sheep (in contrast to pig) in Southeast Europe, makes local domestication unlikely.

Although bone remains of chamois (*Rupicapra rupicapra* L. 1758) were identified some 100km upstream within the gorge (Bolomey 1973:45; Bökönyi 1978a:36; Clason 1980:148), their presence is less likely at this more open site and could not be ascertained on the basis of unambiguous evidence of their relatively robust bones.

Other wild animal species, mostly interpreted as providers of fur, are not as broadly represented at Schela Cladovei as at the other Iron Gates Mesolithic settlements available for comparison. Bones of brown hare (*Lepus europæus* Pall. 1872), badger (*Meles meles* L. 1758), wolf (*Canis lupus* L. 1758) as well as dog (*Canis familiaris* L. 1758) are relatively rare in the material studied. The last-mentioned species would have been of special regional interest, since Vlasac was unambiguously described as a site of Mesolithic

dog domestication by the specialist who analyzed the refuse bone from the site (Bökönyi 1975). Bones of domestic dog were more common in Lepenski Vir I–II (Bökönyi 1969:158) and occurred abundantly in the Mesolithic layers of Padina (Clason 1980:150). To date, no bones from the two large carnivores, brown bear (*Ursus arctos* L. 1758) and lynx (*Lynx lynx* L.1758), have been identified at Schela Cladovei. With the exception of Lepenski Vir (Bökönyi 1969:158), these two species are more-or-less commonly represented in the Mesolithic materials of sites located upstream within the Iron Gates Gorge proper (Icoana – Bolomey 1973:45; Vlasac – Bökönyi 1978:138; Padina – Clason 1980:148). The absence of bear in particular, apparently ubiquitous within the gorge, may be related to assemblage size. The present size of the Schela Cladovei collection is much smaller than those in which bear bones have previously been recorded. The bones of bear are easily distinguishable from those of other mammals in the region.

Hand-collected faunal remains have already demonstrated the importance of fishing at almost all prehistoric sites in this region, but the Schela Cladovei collection is the first for which it should be possible to establish the relative frequencies of fish and mammal remains without the problems caused by major (but unquantifiable) biases against the recovery of small bones, especially from small *Cyprinidæ* (*Tables 2 & 4*). Considering the site's location at the edge of a broad floodplain, it is possible that some of the fish bones originated as natural deposits following inundations by the river. Many of the fish bones, however, were found disarticulated which would not be characteristic of natural deposits unless extremely disturbed (Van Neer & Morales Muñiz 1992:691).

The fish components of comparable hand-collected faunal assemblages from most other Stone Age sites in the Iron Gates Gorge contain the standard trinity of catfish (*Silurus glanis* L. 1758), carp (*Cyprinus carpio* L. 1758) and pike (*Esox lucius* L. 1758) the bones of which are large and, hence, easily spotted and picked out *in situ*. It must also be admitted, however, that it was probably more efficient to catch large fish. Somewhat surprisingly, among the large species, *Acipenseridæ* were not even mentioned in the Mesolithic fish faunas from Padina (Clason 1980:154), Lepenski Vir (Bökönyi 1969:158) or Vlasac (Bökönyi 1978a:36). Although those analyses were not specifically oriented to the ichthyological analysis of prehistoric lifeways, it is unlikely that quantities of fish bone representing the sturgeon family would have been included in the 'Unidentifiable *Pisces*' category in the faunal inventories

for those sites. Bones of great sturgeon (*Huso huso* L. 1758) are reported only from the Neolithic settlement of Mihajlovac–Knjepište (Bökönyi 1992:79) – like Schela Cladovei, downstream of the gorge itself (*Figure 1*).

It is significant, therefore, that bones of *Acipenseridae* do occur in Mesolithic contexts at Schela Cladovei. It could be argued that conditions in the Danube valley immediately downstream of the gorge, where Schela Cladovei is located, were more conducive to catching sturgeon; in fact the river here is so rich in *Acipenseridæ* that nearby Kladovo on the right bank was a sampling site for Dick Brinkhuizen's (1986) pioneering study on the osteology of *Acipenseridæ* living in the Danube. Numerous large specimens of great sturgeon have been caught in Hungary even during the 20th century (Takács & Bartosiewicz 1989). Distance from the sea, therefore, is likely to have played a negligible role in the relative occurrence of *Acipenserid* bones at other Mesolithic sites within the gorge. It may be assumed that these large anadromous fish passed through the fast waters of the gorge itself during a relatively brief period of the year thereby limiting their seasonal availability to prehistoric fishing communities.

Neolithic animal remains

The beginnings of the Neolithic in Romania are associated with the widespread Starčevo–Criş cultural complex, sites of which are found mainly in the southern and south-western parts of the country (Bolomey 1978:5). From an archaeozoological point of view, the onset of the Neolithic is marked by an increase in the contribution of bones from domestic animals to faunal assemblages.

Indeed, at Schela Cladovei the percentages of domestic cattle (*Bos taurus* L. 1758) and sheep or goat bones dominate among the mammalian collection (9.3% and 16.5% of NISP, respectively). The absolute number of red deer remains is almost the same among the 1584 identifiable Neolithic bones from Areas IIIa and VI as in the smaller Mesolithic assemblage; in other words, the relative proportions of bones red deer and wild pig decline. In fact, the relative contributions of wild and possibly domestic pig to the material are insignificant.

Despite the reduction in the number of red deer bones, antlers (as well as the bones and antlers of roe deer) persist in similar proportions to those seen in the Mesolithic collection, which indicates that these resources continued to

be valued, and that some woodland habitats continued to be exploited for, among other reasons, gathering shed antler.

Table 3 Provisional list of Neolithic animal remains from Schela Cladovei (1992–94).

Species		NISP (n)	NISP (%)	Weight (g)	Weight (%)	Mean weight (g)
Aurochs	(*Bos primigenius* Boj. 1827)	19	1.2	983.0	10.3	51.7
Red deer	(*Cervus elaphus* L. 1758)	82	5.2	1721.7	18.0	21.0
Red deer antler		58	3.7	663.9	6.9	11.4
Roe deer	(*Capreolus capreolus* L. 1758)	34	2.1	11.8	0.1	0.3
Roe deer antler		1	0.1	0.7		0.7
Wild pig	(*Sus scrofa* L. 1758)	14	0.9	480.5	5.0	34.3
Brown hare	(*Lepus europæus* Pall. 1778)	4	0.3	5.5	0.1	1.4
Cattle	(*Bos taurus* L. 1758)	148	9.3	3280.4	34.2	22.2
Sheep	(*Ovis aries* L. 1758)	35	2.2	331.0	3.5	9.5
Sheep/Goat	(*Caprinae*)	227	14.3	594.5	6.2	2.6
Pig	(*Sus domesticus* Erxl. 1777)	15	0.9	58.0	0.6	3.9
Dog	(*Canis familiaris* L. 1758)	19	1.2	216.5	2.3	11.4
Greek tortoise	(*Tortuga græca* Boulanger)	22	1.4	50.5	0.5	2.3
Sturgeon sp.	(*Acipensiderae*)	67	4.2	372.8	3.9	5.6
Sterlet	(*Acipenser gentilis* L. 1758)	13	0.8	8.8	0.1	0.7
Catfish	(*Siluris glanis* L. 1758)	33	2.1	143.2	1.5	4.3
Pike	(*Esox lucius* L. 1758)	19	1.2	13.9	0.1	0.7
Carp	(*Cyprinus carpio* L. 1758)	371	23.4	328.0	3.4	0.9
Bream	(*Abramis brama* L. 1758)	11	0.7	9.1	0.1	0.8
Orfe	(*Leuciscus idus* L. 1758)	1	0.1	1.3		1.3
Small cyprinid	(*Cyprinidae*)	371	23.4	143.8	1.5	0.4
Other identifiable	(*Varia*)	18	1.2	162.8	1.7	9.0
Total identifiable		**1582**	**100.0**	**9581.7**	**100.0**	
Large mammal	(*Mammalia* indet.)	354		1539.0		4.3
Small mammal	(*Mammalia* indet.)	397		329.3		0.8
Fish indet.	(*Pisces*)	249		69.5		0.3

Hare also continues to be utilized in very small quantities, but other game species or fur bearers such as wolf and badger are absent from the Neolithic collection. They were very rare in the Mesolithic assemblage but, given that the Neolithic collection is twice as large as that from the Mesolithic deposits, their absence from the Neolithic assemblage is unlikely to be due to random sampling biases and may be related to declining hunting activity.

Table 4 Neolithic fish bone recovered by water sieving (preliminary results).

Species		NISP (n)	NISP (%)	Weight (g)	Weight (%)	Mean weight (g)
Sterlet	(*Acipenser gentilis* L. 1758)	7	1.9	2.8	1.3	0.4
Catfish	(*Siluris glanis* L. 1758)	12	3.2	13.2	6.0	1.1
Pike	(*Esox lucius* L. 1758)	17	4.6	15.3	6.8	0.9
Carp	(*Cyprinus carpio* L. 1758)	249	66.8	149.4	67.4	0.6
Bream	(*Abramis brama* L. 1758)	36	9.7	12.0	5.4	0.3
Orfe	(*Leuciscus idus* L. 1758)	18	4.8	1.8	0.8	0.1
Barbel	(*Barbus barbus* L. 1758)	34	9.1	27.2	12.3	0.8
Total identifiable		**373**	**100.0**	**221.7**	**100.0**	
Small cyprinid	(*Cyprinidae*)	365		73.0		0.2
Fish indet.	(*Pisces*)	1223		122.3		0.1

Among the wild animals the lack of bear bones is again worth considering separately. In addition to the Mesolithic sites used for comparison in this study, Neolithic brown bear finds have been described from sites along the lower stretches of the Danube (Spantov, Gumelniţa, Izvoarele; Haimovici 1963:535), and Mediaeval remains of bear were found at Kladovo on the right bank of the river opposite Turnu-Severin (Bartosiewicz, in press).

In the domestic fauna, the contrast between the percentages of *Caprinae* and pigs is reminiscent of the 10 to 1 ratio between these two types of small stock characteristic of Körös culture settlements in Hungary and northern Serbia (Maroslele–Pana, Ludas–Budzsák, etc.: Bökönyi 1969, 1974). The balance between the meat exploitation of sheep and pig seems to be a delicate indicator of both extreme environmental conditions and cultural

trends throughout modern day Africa and the Middle East (Bartosiewicz 1984:50), and a similar dichotomy is evident in numerous prehistoric faunal materials (Bartosiewicz 1990*a*). Given the prehistoric environmental setting in the Iron Gates Gorge, especially the more open topography near Schela Cladovei, the increased significance of sheep may reflect more than a cultural preference for one domesticate over the other; since some Mesolithic Suid bones may have derived from small wild individuals, a decline in the consumption of pork ('hunting') and an increase in the significance of mutton may be looked upon as the result of agricultural development.

Remains of domestic dog have been identified from both the Mesolithic and Neolithic collections at Schela Cladovei. Their proportion in Neolithic contexts shows only a slight increase compared to the Mesolithic material.

The principal difference in the fish resources exploited in the Neolithic, compared to the Mesolithic period, is the reduced importance of species of sturgeon. This difference in the collections must be real since, of all of the fish identified, the sturgeon remains are those least likely to be affected by ratios of hand-recovered to sieved material in the two collections (because of their comparatively large size). *Tables 2 & 4* show a very similar pattern for the Mesolithic and Neolithic at Schela Cladovei – *i.e.* more-or-less the same species identified in almost identical proportions in the Mesolithic and Neolithic collections, excepting the probably insignificant paucity of sterlet in the Neolithic assemblage.

The water-sieved samples from Schela Cladovei that have been examined to date are dominated by the remains of small size carp and numerous other *Cyprinidæ*. Most of these fish are characteristic of slow, relatively warm waters (Berinkey 1966). In fact, bream (*Abramis brama* L. 1758) is even used in the ichthyological classification of various river sections (Harka 1993:87) as a prominent indicator species of lowland ecological habitats in river sections (*metapotamon*). Barbel (*Barbus barbus* L. 1758), on the other hand is considered a fish of the lower foothill zone (*epipotamon*), a clear indicator of the type of waters upstream of Schela Cladovei. Naturally, such associations are by definition stochastic owing to the movement of fish stocks across methodologically established boundaries.

Rare occurrences of pike in the Iron Gates region as a whole (Padina – Clason 1980:154; Vlasac – Bökönyi 1978*a*:36) and the remains of relatively small size specimens at Schela Cladovei may be indicative of the fact that this

species, which relies largely on visual stimuli in hunting, did not thrive in sluggish, murky waters, especially in the lowland-type zone (Bartosiewicz 1990*b*).

The presence of large *Acipenseridæ* in Neolithic levels shows continuity in the prehistoric presence of these species which are known to have migrated along the river as far upstream as present-day Bratislava in later periods. Two *Acipenserid* bones were identified in a hand-collected assemblage of 686 fish bones from a Copper Age settlement of Győr–Szabadrét-domb in the general vicinity of Bratislava (Bartosiewicz *et al.* 1994:110). In addition to a Roman Period find of great sturgeon (Bartosiewicz 1989:616), the northern section of the Danube in Hungary also included the official sturgeon fishing grounds of the Hungarian Royal Court during the Middle Ages (Khin 1957:12). The prehistoric and Roman period finds obviously pre-date specialized sturgeon fishing in Mediaeval times.

Conclusions

It is noteworthy that the Mesolithic assemblage from Schela Cladovei contains bones from a greater number of animal species than the much larger Neolithic sample. Bolomey (1973:52) observed that the Epipalaeolithic was characterized by exploitation of a comparatively diverse set of mammals which gradually developed into a somewhat more specialized hunting of red deer and probably wild pigs prior to the introduction or development of domestic fauna. The Schela fauna shows a concentration on bones of red deer and pig, together with occasional examples from various other wild species of mammal. In the Neolithic collection, the bones of pigs (both wild and possibly domestic) are far fewer than they were in the Mesolithic collection, and indicate a marked decline in their relative importance in terms of NISP. Red deer bones similarly decline in relative importance, although not quite so markedly. Taken together with the great increases in the relative numbers of bones of domestic cattle and domestic sheep or goats, it appears that the Neolithic people placed more emphasis on the acquisition or raising of domestic livestock than on the acquisition of local wild mammals.

As pointed out by Bökönyi (1978*b*) the dog remains from Vlasac provide good evidence of Mesolithic domestication, while other domestic animals, especially cattle and sheep, only started to occur in the area in the early Neolithic.

The possibility of mixing of bones from Mesolithic and Neolithic deposits at Schela Cladovei renders it impossible to be certain that examples of domestic fauna recovered from supposedly Mesolithic features are not, in fact, contaminants from Neolithic contexts. The relative contributions of domestic bones of cattle and sheep (or goat) to the total Neolithic NISP are much higher than they are for the Mesolithic collection, which may suggest that the 'Mesolithic' examples are, indeed, intrusive. The relative contributions for the dog bones, however, are very similar for the two periods, and this may lend some support to the idea that domestic dogs were present at the site during the Mesolithic. The actual numbers of bones, however, are extremely small and, given the uncertainties of the stratigraphy, the evidence should be regarded as inconclusive.

Long before water-sieved materials were analyzed from Schela Cladovei, the importance of fishing had been emphasized by all faunal analysts working in the Iron Gates Gorge. Prior to modern dam projects, this stretch of the Danube represented a special aquatic habitat within a predominantly lowland-type section (Harka 1993:86). Among the Mesolithic sites under discussion here, however, Schela Cladovei is located closest to the exit from the gorge. The flow of the Danube slows down here, and small *Cyprinidæ* characteristic of the lowland habitat again dominate. The great contribution of *Acipenseridæ* at this site may, in part, be explained by this environmental setting, since remains of these fish also occur regularly in lowland sections of the Danube in Hungary. In contrast to the remains of terrestrial animals, the fish bones from the Mesolithic and Neolithic assemblages are extraordinarily similar in terms of species represented and percentages of total NISP. This is very important, and indicates that fishing continued to be a significant part of the Neolithic subsistence strategy when the exploitation of other wild vertebrate resources declined.

It is surprising that very few bird bones have been recovered from the Stone Age deposits (analysis of the half dozen or so bones found to date has been postponed, in the hope that more remains will become available for study as the excavation continues). The riverside should have provided rich pickings for a variety of bird species, and both the Mesolithic and Neolithic inhabitants of Schela Cladovei must have had the expertise for preying upon these animals. In contrast, even in the absence of water-sieving, bones from a number of bird species were identified at Vlasac. The final analysis of the

entire faunal assemblage from Schela Cladovei may offer an explanation for this phenomenon.

Finally, it must re-emphasized that the data and conclusions presented in this paper are provisional. They will need to be re-assessed when the fieldwork and post-excavation analyses have been completed.

Acknowledgements

Faunal analysis at the site of Schela Cladovei was carried out within the context of the joint Romanian–British archaeological project, co-directed by V. Boroneanţ and C. Bonsall. Financial support for the zoological work was provided by the Caledonian Research Foundation and the Royal Society of Edinburgh. The project as a whole receives support from The British Academy, The Carnegie Trust, and the Hayter Fund and Munro Lectureship Fund of The University of Edinburgh.

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An Early Mesolithic Hunting Camp at Posterholt, Municipality of Ambt Montfort (The Netherlands)

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Introduction

Although we know of many sites from the Early Mesolithic in the south of the Netherlands and the north of Belgium, upon closer analysis these turn out to only rarely provide a detailed understanding of the activities carried out on the sites by prehistoric man. To find out anything about these activities it is important to investigate well-preserved, briefly-used, small sites. Against this background an Early Mesolithic settlement in the valley of the River Vlootbeek, southeast of Posterholt (*Figure 1*) was excavated between 1993 and 1995 (Verhart 1995*a*, 1995*b*). The first preliminary results are presented.

Figure 1 The Netherlands and the location of Posterholt.

Find history

In the mid-1970s amateur archaeologist Mr H. Schmitz from Posterholt discovered the first site with flint artifacts in the valley of the Vlootbeek. More intensive searches yielded ever more sites. At present 19 are known (*Figure 2*).

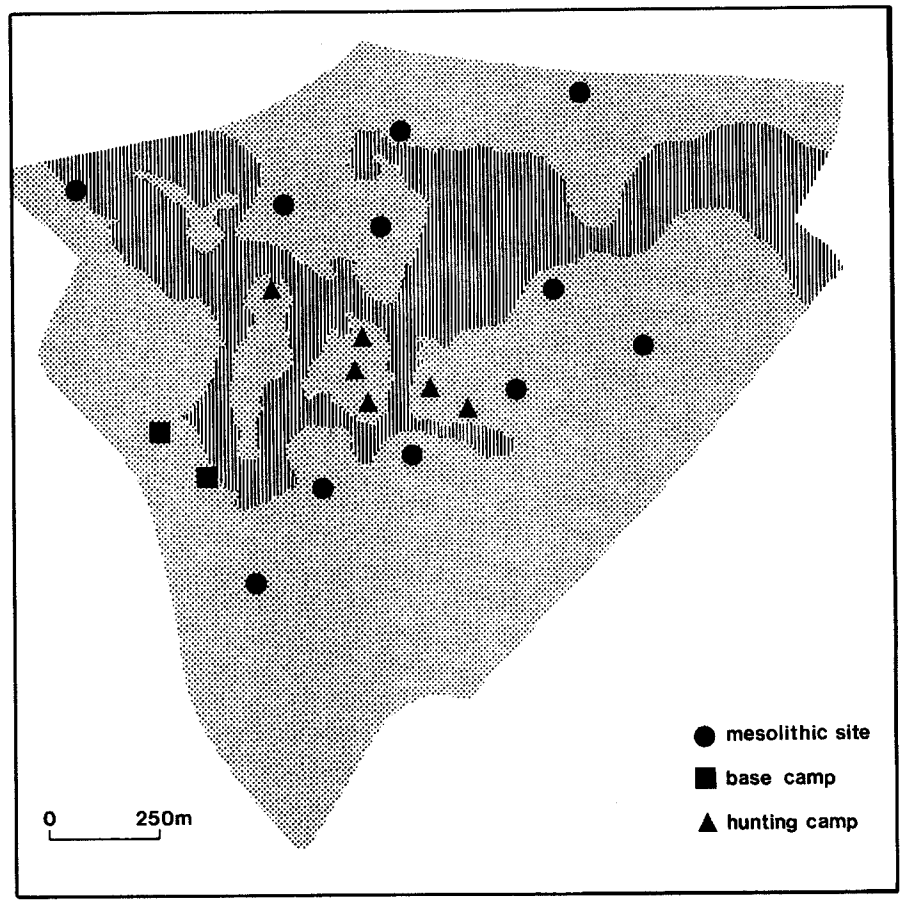

Figure 2 The research area south-east of Posterholt with the location of the currently known sites. The ancient course of the River Roer has been indicated by hatching; the higher terrain by dots.

In 1987 a number of these sites were investigated more closely by digging test pits (Verhart & Wansleeben 1988, 1991*a*). It was found that in a large number of sites the soil profile was still intact and there were finds remaining *in situ*. Analysis of the surface finds and the data from the trial excavations make it clear that in the valley of the Vlootbeek a site pattern can be discerned that dates from an early phase of the Mesolithic. Remains of later activities are almost completely absent. There turns out to be a close relationship between the type of site and the site location.

In the valley, on shallow sand and gravel banks, there are small sites with few finds dominated by projectile points. These sites are considered to be hunting camps. On the rim of the valley larger sites are located with much flint material, representing almost all types of tools. These could be base camps.

The threat to the sites and the question of what kinds of activities were carried out in a camp induced us to start an investigation of one such small camp in the valley in 1993. This investigation was completed in 1995.

The terrain

The modern terrain in the eastern part of the valley of the Vlootbeek is characterized by a variety of arable land, pastures and small parcels of woodland.

Originally the River Roer flowed through this area. At the end of the Lateglacial the river had a meandering course. Shortly afterwards the Roer changed its course to the north and it now runs via Vlodrop, Melick-Herkenbosch and St. Odiliînberg to Roermond. There has been much speculation on why the Roer changed its course. At present it is thought that tectonic processes caused the change in the river's course.

The relief of the Lateglacial Roer in the valley of the Vlootbeek is still discernible to the trained eye. The meanders are visible as depressions, while the sand and gravel banks are identifiable as slight elevations. Thanks to the relatively minor human interference in this terrain in the past and the absence of later disruptive agricultural activities, it has been preserved relatively well.

In the old meanders there are clay and peat deposits from the Lateglacial/ Early Holocene. By now a pollen diagram has been constructed of such a

meander fill. The quality is excellent, enabling a reconstruction of the contemporary vegetation. In the higher reaches of the valley rim there were relatively open woods consisting of pine, birch, and an occasional oak. Along the meandering Vlootbeek the vegetation was more open, with an abundance of hazel.

Soil conditions

In the Lateglacial the Roer wound its way to the Meuse. The irregular supply of water allowed deposition of thick layers of gravel and sand. In a phase with a more constant supply of water the Roer started to meander. The final phase of the Roer is characterized by the deposition of a layer of loam. This is absent on the highest sand and gravel banks, but at the sides the thickness ranges from several centimetres to several decimetres. The Mesolithic habitation occurred at this level.

After the habitation period a thin sand cover seems to have been deposited, which has now been incorporated into the soil due to ploughing. This aeolian sand contributed to the preservation of the sites.

Method of excavation

For some time new methods have been experimented with in order to investigate individual Stone Age sites more rapidly (Verhart & Wansleeben 1989, 1991*b*). Traditionally, during an excavation the soil is dug up with a small trowel and the finds discovered are measured in three dimensions. Afterwards the excavated soil is sieved once more to catch even the tiny pieces that have been overlooked during trowelling. Apart from the fact that such a method takes a lot of time, it is assumed that the finds are still in more or less the same locations in which they were left by prehistoric man. In sandy soils this turns out not to be the case. Growth of roots and digging by ants, beetles, worms, mice and moles shifted the finds in the soil. By not measuring the finds individually and avoiding at the same time the extremely time-consuming trowelling, greater efficiency can be attained. In order to preserve a fair degree of detail and maximize time, the decision was made to excavate the site in squares of 25 x 25cm, divided into unit-levels of 15cm, sieving the soil through a 3mm mesh, and collecting and describing the finds. By translating the find densities in a cell size of 25 x 25cm into map

images, a distribution map is obtained which is hardly inferior in accuracy to maps with individually measured finds. In cutting the squares attention was paid to the possible presence of soil traces of pits and fireplaces. Except for a small, probably Iron Age burrow, no soil traces were discovered. In this way an area of 424m^2 has been investigated.

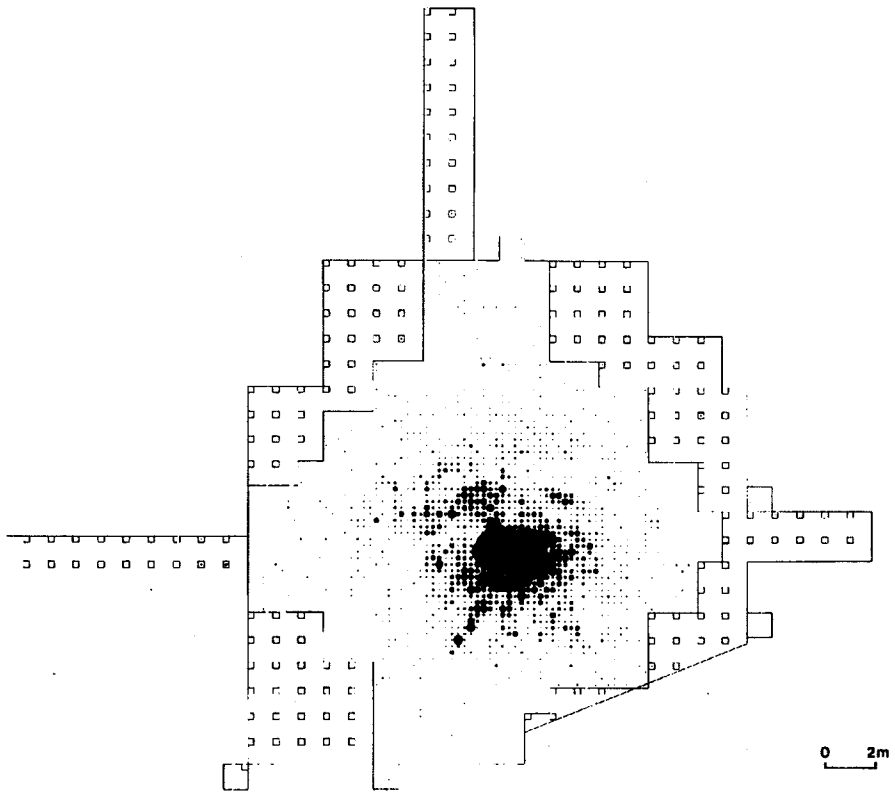

Figure 3 Distribution of the flint in the undisturbed soil per 25 x 25cm square. The maximum number of finds in a single square is 76 items.

Excavation results

Approximately 6000 pieces of flint have been found in the undisturbed subsoil. Only 1400 pieces are over 15mm. The majority of the finds therefore consist of small flint debris.

From the distribution map (*Figure 3*) it is obvious that the finds are scattered over a small area with a diameter of about 6 metres. Within this area two small concentrations are discernible, each about a metre across, and close together.

The finds consists mainly of debris of flint working – some hammer stones, cores, blocks, flakes and blades. The flint was worked by a hard hammer technique. The flint used was of good quality and in part comes from deposits in the bed of the River Meuse, but a proportion appears to originate from the Belgian province of Hainault. In addition, some pieces of Wommersom quartzite have been found. These types of stone indicate long-distance contacts.

The composition of the types of tools is remarkable. Scrapers – very numerous on Stone Age sites – are almost completely absent, while points and micro-burins are strongly represented with 81.4% (*Table 1*).

Table 1 Composition of the retouched artifacts from Posterholt.

Tools	*n*	*%*
points	61	54.0
micro-burins	31	27.4
scrapers	3	2.7
burins	3	2.7
retouched flakes/blades	15	13.3
Total	**113**	**100.1**

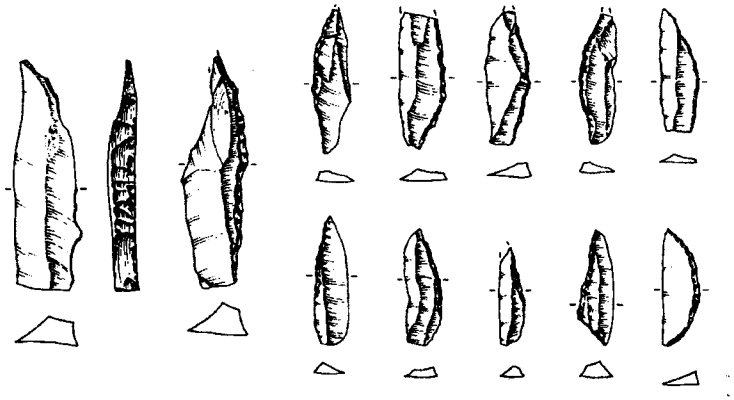

Figure 4 Points: 1–2 Tjonger-points; 3–7 A-points; 8–10 B-points; 11 asymmetric triangle; 12 segment. Scale 1:1.

Among the arrowheads A- and B points are predominant (*Figure 4*). A remarkable feature is the discovery of two large points in the centre of the concentration, considered to belong to the Tjonger or Federmesser types. Many points are broken, with a predominance of basal fragments. A large number of points show impact damage caused by use.

The number of scrapers is small, as is the number of flakes and blades with retouch.

Charcoal and burnt flint are indicative of the presence of a hearth. The location of this hearth could, however, not be determined.

Spatial analysis

The first impression gained from the distribution patterns of the various artefact categories is that the site has been well preserved. A first indication of this is the clear definition of the overall find distribution. The differences among the distribution patterns of the various artifact categories indicate excellent preservation conditions as well. The cores are found in the northeastern part of the find area, surrounding the two small concentrations of flint debris. The tools have a completely different distribution pattern. The

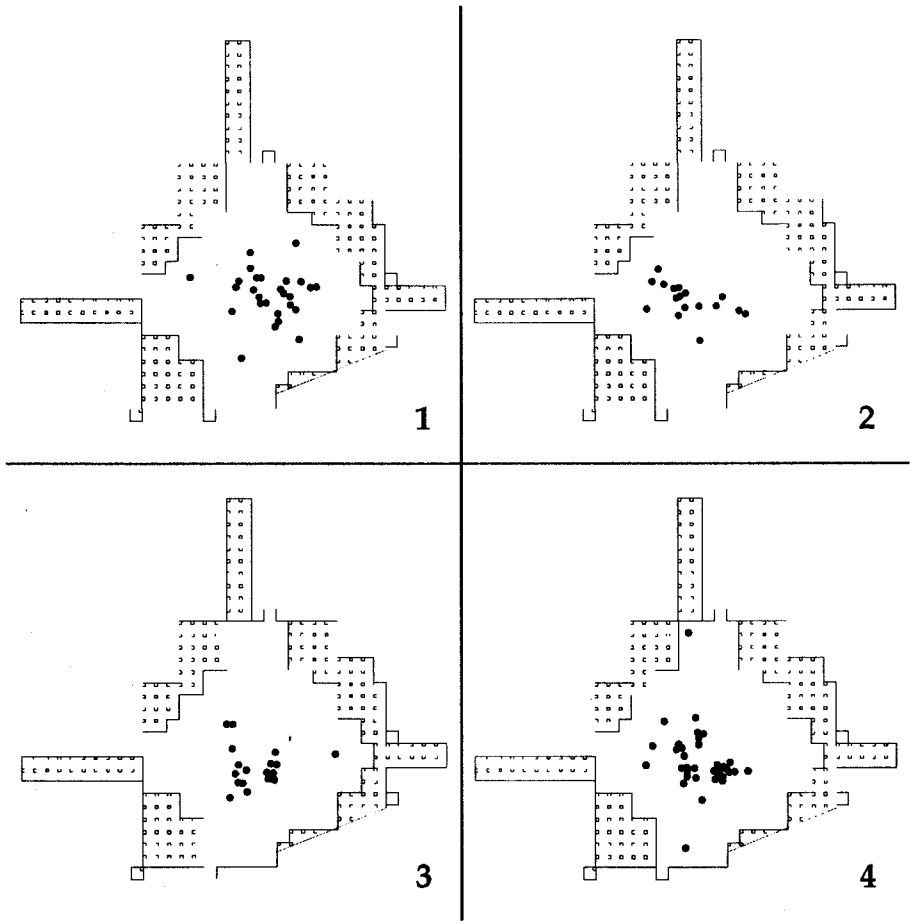

Figure 5 The distribution of cores (1); retouched flakes/blades and scrapers (2); points (3) and micro-burins (4).

retouched tools, including the scrapers, are located in the southwestern part. The distributions of the points and micro-burins overlap one another and can be distinguished as two clusters.

Interpretation

The excavation data have not yet been worked up in detail, and so we have to be circumspect in interpreting the site. But some preliminary observations can be made.

The overall find distribution, the definition in the pattern, and the finds all suggest a single, short-term use of the area. The site can be characterized as a hunting camp, owing to the large number of points, the many micro-burins, and the small number of scrapers.

Different activities appear to have occurred on spatially distinct locations (*Figure 5*). Most striking is the overlap of points and micro-burins. This is a sign that arrowheads were made and hunting gear repaired on this spot. The presence of two clusters may mean that two persons took part in this activity or that there were at least two episodes, separated in time.

The small size of the site is an indication that the group that stayed here was small. If ethnographic data on recent hunter-gatherers and archaeological data are also representative of the Dutch Mesolithic, a small group of hunters, made up of men and boys, will have camped here.

Conclusion

The results of the investigation are in keeping with the initial interpretation of surface finds in the valley of the Vlootbeek. The camps in the valley appear to have been used as hunting camps. The degree of preservation of the site is remarkable for the area of the southern Netherlands and the north of Belgium. Working out all excavation details, combined with an extensive refitting programme and an investigation into traces of use on flint will undoubtedly lead to a detailed interpretation of the site that will improve our knowledge of the Early Mesolithic.

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References

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Price, T.D., Whallon, R. & Chappell, S. 1974. Mesolithic sites near Havelte, province of Drenthe (Netherlands). *Palaeohistoria* 16:7–61.

Woodman, P.C. 1978. The chronology and economy of the Irish Mesolithic: some working hypotheses. In *The Early Postglacial Settlement of Northern Europe*, edited by P. Mellars, pp. 333–369. Duckworth, London.

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