MAPPING GRAVETTIAN EASTERN EUROPE: CEJKOV AND EASTERN SLOVAK SETTLEMENT IN CONTEXT

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Abstract

We present the results of a field project at Cejkov in eastern Slovakia, describing the location, geochronology and paleoenvironment of the site, and provide an overview of recovered materials. We also situate the site in the context of contemporaneous late Gravettian sites in central and eastern Europe. In presenting well-documented and dated sites from the region that fall within the range of 25–22 Kyr B.P., we wish to open a discussion of social interactions within and between regions. This essay aims to narrow the time frame in which Late Upper Paleolithic settlements in Europe are discussed, and put forth a database that allows the mapping of late Gravettian settlements.

INTRODUCTION

In this essay we wish to accomplish two tasks. First, we present the results of a field project at Cejkov in eastern Slovakia, describe the location, geochronology, and paleoenvironment, and present the recovered materials from the site. Second, we situate the site in the context of contemporaneous late Gravettian sites in central and eastern Europe. We present well-documented and dated sites from the region that fall within the range of 25–22 Kyr B.P. to open a discussion of social interactions within and between regions. This essay aims to narrow the time frame in which Late Upper Paleolithic settlements in Europe are discussed, and put forth a database that allows the mapping of late Gravettian settlements.

Paleolithic population settlements and movements in Europe just prior to and during the Last Glacial Maximum (LGM) have been the focus of renewed attention in recent years, and our knowledge has been greatly enhanced with new radiocarbon dates (e.g. Roebroeks et al., 2000; Soffer and Gamble, 1990; Vasil'ev et al., 2000). More precise dating, and the increase in the sheer number of known dates, has improved our understanding of the movements of prehistoric populations through the continent, as well as their adaptation to changing environments, their establishment of settlements in specific regions, and their abandonment of those sites with the deterioration of the climate during the LGM. However, most of our knowledge of the Upper Paleolithic has been based on data from well dated and documented sites in western Europe (and particularly southwestern Europe), then extended to apply to the continent as a whole. The Gravettian is the only exception where central Europe plays an important role. Sampling bias thus remains the major obstacle to regional studies and models of population dynamics between western, central, and eastern Europe, and in building hypotheses of migrations and interactions between groups within regions and across the continent.

The central European Upper Paleolithic has been mainly represented in the literature by the Moravian sites such as Dolní Vestonice, Pavlov,
Predmostí and Stránská skála (Svoboda, 1991; Svoboda et al., 1996; Trinka et al., 2000), to some degree by Austrian sites, such as Alberndorf (Bachner et al., 1996; Trnka, 2004), Grubgraben (Montet-White, 1988, 1994), or Willendorf (Hae-sarts et al., 1990, 1996), recently several German sites (e.g. Conard and Adler, 1997; Street and Terberger, 2000) and a few Hungarian sites (Dobosi, 2000a; Svoboda and Simán, 1989). The specific details and dates of the east European Upper Paleolithic, particularly from the former Soviet Union, have become much better known in the last decade (e.g., Allsworth-Jones, 1994; Anikovich, 1992; Borziac, 1997; Hoffecker, 1999, 2002; Iakovleva, 2000; Leonova, 1994; Vasilev et al., 2000). Yet the connections, relationships, and routes between and within eastern, central, and western Europe remain sketchy, and largely based on assumptions. Considerable further research will be required for us to have a clearer picture of population movements and settlements just prior to the Last Glacial Maximum.

The generally accepted model suggests depopulation of most of Europe during the LGM (20–15 Kyr). However, attention has also been called to a need for investigation of microclimates, particularly in central Europe, preceding and during the LGM, which would have allowed either survival or occasional episodes of small scale occupation (Barton et al., 2003; Street and Tarberger, 2000). This need to consider individual ecological niches encourages a more detailed look at particular micro-regions and their relationship with adjacent settings. Slovakia is one such region, which has received little attention in debates of prehistoric movements between eastern and western Europe or even within Europe in general. The west Slovak Váh river valley sites Moravany and Nitra-Čermáň are better known partly due to their proximity to the Moravian sites (Svoboda, 1991, 2000), and partly due to more recent renewed excavations (Hromada and Kozlowski, 1995; Kozlowski, 1998; Verpoorte, 2004). Eastern Slovakia on the other hand, while the focus of considerable Slovak archaeological research for the last four decades, is far less well known internationally, as the results of this work have either not been translated (e.g., Bánez, 1989, 1990, 1996; Bártta, 1965) or the publications have been short survey reports without wide distribution. To provide a more detailed archaeological picture of central and eastern Europe, the authors engaged in an international collaborative project in eastern Slovakia in 2000 and 2001. The major contribution of this project is an establishment of a well-dated record for eastern Slovakia, providing a reference in discussions of migrations and population movements close to the last glacial maximum within this region and in eastern Europe in general.

GEOGRAPHY AND LOCATION

Eastern Slovakia lies at the intersection of several broad geographic regions of Europe: a north central region encompassing Germany, Poland and the Czech Republic; a northeastern region encompassing the Ukraine; and the Russian steppe zone, and southeastern region composed of Hungary, parts of Romania, and the Balkans. The Carpathian Mountains in the north and east of the region provide a physical barrier to the northern European Plain, the Baltic and the Russian steppe, while the Hungarian Plain to the south opens to the valleys of the Tisza and Danube rivers. The valleys of the Ondava and Topľa rivers constitute the main potential communication route between the Tisza basin and Carpathian passes leading to the Vistula basin. At the same time, the Uh and Latorica rivers that flow from east to west provide potential communication routes for the eastern Slovak lowland with the Ukraine, and with the mountain passes of the eastern Carpathians leading to the Dniester basin. This communication junction encouraged us to take particular interest in the territory of eastern Slovakia that includes the Topľa and Ondava basins (Fig. 1).

Cejkov is located in the catchment of the Ondava River, on the eastern slope of the Zemplín Mountains and in the southern part of the east Slovak Lowlands. It has received initial attention as a potential site of extensive Gravettian and Epigravettian occupations (Bánesz, 1976, 1980), and fit our general interest in settlement and interaction context of the region during the late Upper Paleolithic. The site of Cejkov is to the north of the village of the same name, on the slopes of the Tokaj hill, which is 158 m above sea level, an eastern outpost of the Zemplín range formed by rhyodacite minerals. It is bordered on the north
side by the Lagaš tributary of the Ondava river, rising steeply about 30 m over the stream. Equally steep are the eastern and western slopes; only the southern slope has a moderate incline (Fig. 2).

LITHIC SOURCES

We began the project with a surface survey of the Ondava river valley further to the north, near the locality of Nižný Hrabovec (SE Slovakia, 48°51′N, 21°24′E) where surface collections of Paleolithic artifacts had been reported by local amateur archaeologists (Bánesz and Zubko, 1992). Four test trenches were made in order to determine the stratigraphic position and geomorphology of the finds, and observations were carried out in the neighboring natural profiles and industrial quarries. Materials from our surface collection and test pits were analyzed in terms of sourcing (Pawlikowski, 2000). The identified raw materials were classified in the following manner shown in Table 1.

The raw materials indicate a role of this area as a communication junction for Paleolithic occupants of central and eastern Europe. The long list of mesolocal and foreign raw materials allows us to suggest a broad range of interregional links in eastern Slovakia. Typologically the artifacts at

Fig. 1. Distribution of central and east European Late Gravettian sites (22–25 Kyr)

Fig. 2. Cejkov 2001, view of location on Tokaj Hill, eastern Slovakia
Nižný Hrbovec displayed typological features ranging from Mousterian types, using the Quina and bifacial retouch, Levallois technology, Bohunician types that could potentially represent transitional industries, Aurignacian and Epi-Aurignacian tool types, as well as a few Gravettian and Epi-gravettian diagnostic finds. The archaeo-
logical materials suggest a continuous presence of human groups in the area during the Middle and Upper Paleolithic. The stone tools also indicate that we are dealing with material remains of groups that were most likely highly mobile, and traveled to the north (present-day Poland), south (Hungary), and the east (the Ukraine), or had extensive social networks that allowed an exchange of information and/or materials (Bárta, 1965; Kamin-
ská, 1991). Previous geoaarchaeological investigations of the region revealed its importance as a source of radiolarite, and particularly obsidian that was transported to sites in central and eastern Europe during the Paleolithic, and even more ex-

While our initial surface collections at Nižný Hrbovec suggested a rich potential for the Ondava river valley, the subsequent test pits also indicated a significant postdepositional disturbance, solifluction, and soil movement that precluded any possibility of a clear stratigraphic picture. Consequently we relocated during the following season further south along the Ondava River to Cejkov (48°28’N, 21°46’E), a locality that has been originally excavated by Bánesz, in a close

proximity to another known Paleolithic locality – Kašov. The field project at Cejkov confirmed that the analysis of the raw material sources from Nižný Hrbovec can be applied to the region of eastern Slovakia as a whole, confirming the status of the region as an intersection between east and west and north and south.

**CEJKOV: GEOCHRONOLOGY AND PALEOENVIRONMENTAL SETTING**

The research at Cejkov was informed by previous work in the area by Bánesz, carried out intermittently since the 1960s until the late 1980s (Bánesz, 1969, 1976, 1980, 1990, 1996; Bánesz and Pieta, 1961). The five excavation units that we carried out were placed in relation to earlier units by Bánesz, relying on his records and maps. Soil analysis of samples from the units indicated that soil movements, postdepositional changes and solifluction seriously affected the area and only excavation unit 1 had stratigraphy that was reliable and well preserved. This unit contained a number of lithic artifacts, bone fragments and two features; archeobotanical and soil samples were taken from here for a detailed paleoenvironmental reconstruction (Hajnalová) and soil analysis (Fig. 3).

The soil analysis of the cultural level in exca-
vation unit 1, deposited in a calcareous loess, sug-
gests that the Gravettian occupation at Cejkov oc-
curred before the Tursac interstadial. The layer produced abundant (in numbers as well as in vol-
ume) charcoal fragments of coniferous trees or

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### Table 1

Eastern Slovakia: Ondava river valley raw material classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>Distance (km)</th>
<th>Raw material</th>
<th>Source</th>
</tr>
</thead>
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<tr>
<td>Local</td>
<td>25-30</td>
<td>hornstone</td>
<td>Ondava river valley</td>
</tr>
<tr>
<td>Mesolocal</td>
<td>50-150</td>
<td>radiolarite, black menilithic hornstone</td>
<td>NE Slovakia</td>
</tr>
<tr>
<td>Mesolocal</td>
<td></td>
<td>radiolarite, obsidian, jasper</td>
<td>SE Slovakia, Hungarian border, Bükk mountains, Dnestr basin</td>
</tr>
<tr>
<td>Foreign</td>
<td>180-300</td>
<td>flint</td>
<td>middle Vistula river, upper Oder basin, Krakow-Częstochowa Jurassic Plateau</td>
</tr>
<tr>
<td>Foreign</td>
<td></td>
<td>chocolate flint</td>
<td>Holy Cross mountains</td>
</tr>
<tr>
<td>Foreign</td>
<td></td>
<td>andesite</td>
<td>Korolevo, Ukraine</td>
</tr>
</tbody>
</table>
shrubs, and spruce (*Picea abies*), and a smaller abundance of fragments of dicotylous (broad leaf, mostly deciduous) trees and shrubs, as well as possible food fragments. Based on these results we would suggest that a cold and humid spruce woodland existed in the vicinity of the site during the occupation phase. Some cold resistant deciduous broad leaf trees/shrubs (such as willow, silver birch, mountain ash) could have grown in such an environment as well. However, on the basis of the shape and context of the hearth we also recognized during the excavation that it cannot be entirely excluded that only a single spruce log burnt in the feature. This well preserved feature could have resulted in an over-representation of the species (*Picea abies*) in the archeobotanical assemblage, adding a cautionary note to the paleoenvironmental reconstruction (Fig. 4).

Theoverlaying stratigraphic level above the cultural layer contained burnt charcoal, and was radiocarbon dated to 22,480 ± 120 B.P. (Beta 159856). The date and the nature of the sedimentation suggest mild Tursac oscillation geochronology. This layer (corresponding to Bánesz’ Paleolithic phase II) was represented by charcoal samples of deciduous trees, both above and below the artifacts bearing layer. The ratio between deciduous and coniferous fragments was 5:1, suggesting a warmer and/or more humid climate.

The additional cultural level with numerous lithic artifacts that we sampled for archeobotanical remains was located in excavation unit 5, located 75 m from the top on the northern slope of the hill. Here level 2, only 22 cm below the
plough zone, contained oak (*Quercus*), rose (*Rosa*), deciduous, coniferous, and indeterminate charcoal, as well as potential food remains. The suggested paleoenvironment appears to have been warmer open mixed deciduous (oak) woodland, with possible pioneer conifers (e.g., pine, juniper) growing in extreme locations such as slopes or marshes. However, soil analysis of this excavation unit suggested a clear postdepositional soil movement, cryoturbation and the layers were visibly disturbed through anthropogenic activities, leading us to a much more skeptical view of the paleoenvironmental reconstruction from this unit.

Consequently, we feel confident about establishing a securely dated Gravettian occupation of eastern Slovakia at the locality of Cejkov on the basis of soil, archeobotanical, and archaeological materials from excavation unit 1. (The few associated animal bones were too fragile and too small for identification.) This occupation occurred in a cold, humid spruce woodland setting, dated to 23–25 Kyr.

All dates were AMS $^{14}$C dates based on charcoal samples:

23,440 ± 120 B.P. (Beta 159853)
23,820 ± 40 B.P. (Beta 159852)
24,130 ± 130 B.P. (Beta 159855)
24,240 ± 120 B.P. (Beta 159854)
24,800 ± 110 B.P. (Beta 159851)

This article places Cejkov within a larger central and east European context. A much more detailed account of Cejkov with site maps, illustrations of site profiles, recovered lithic artifacts, and a discussion of typology, and raw materials were published elsewhere, and we refer interested readers to that publication (Kaminská and Tomášková, 2004).

**ARCHAEOLOGICAL MATERIALS**

The entire surface collection from the southern slope of the Tokaj Hill consisted of 377 typologically defined Paleolithic artifacts. Most numerous were burins, such as an obsidian dihedral lateral burin, a dihedral burin on a tanged retouched limnic quartzite blade, and a multiple dihedral burin made on opal. The majority of the collected artifacts were flakes, 318 of them made on obsidian, six on limnic quartzite, three on chert, two on opal, and one on menilithic flint (Tables 2–3).

The upper layers of the excavation units 1–5/2001 contained mostly flakes, 43 of them were made on obsidian and one on limnic quartzite, in

<table>
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<tr>
<th>Unit &amp; Layer</th>
<th>Cores</th>
<th>Blades</th>
<th>Microliths</th>
<th>Flakes</th>
<th>Burin spalls</th>
<th>Retouched tools</th>
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### Table 3

Cejkov: Raw materials by excavation unit and layer

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<th>Unit &amp; Layer</th>
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<th>Radiolarite</th>
<th>Opal</th>
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### Table 4

Cejkov: Lithic industry, typology by unit and layer

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Cejkov: Lithic industry, typology by raw material

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<th>Stone tools</th>
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**Fig. 5.** Cejkov 2001, surface collection, lithic artifacts

addition to three obsidian cores. The obsidian from the top two layers was grayish black with fluid texture, a type that is most common in the Zemplín area of eastern Slovakia. Limnic quartzite is very common at Cejkov I, appearing in all layers in numerous color variants. Limnic quartzite sources are known in eastern Slovakia (Kaminská, 1991:20) but the raw material used in Cejkov I resembles limnic quartzites from northeastern Hungary. Similarly, the nontransparent black obsidian, found alongside the grayish black variety, is most likely from the Hungarian sources (Williams-Thorpe et al., 1984). The brown chert, used in the majority of the stone artifacts, is known from the central Ondava river valley, concentrated near Nižný Hrabovec the location of our initial survey (Tables 4–5).

The lithic industry from layer 5, the only stratigraphically secure and dated layer in excavation unit 1, consisted of cores, flakes and blades. Raw materials were represented by nontransparent black obsidian, quartzitic sandstone, and limnic quartzite. We conclude that the settlement in the Ondava river valley in eastern Slovakia represents a well established presence of Late Gravettian
groups in the area. The archaeological materials suggest mobility and/or contacts within the region, as well as between adjacent regions, leading us to a wider comparison of contemporaneous sites in central and eastern Europe (Figs. 4–9).

CONTEMPORANEOUS LATE GRAVETTIAN SITES IN CENTRAL AND EASTERN EUROPE

The initial research interest in this project was the nature and extent of social interactions between Gravettian groups in central and eastern Europe, as a move towards Paleolithic social archaeology. Our initial investigation of the sources of raw materials from Paleolithic collections in eastern Slovakia suggested regional as well as long distances sources, indicating social contacts and interactions and/or travel in eastern, northern, and southern directions. To expand this horizon, and evaluate the possibility of intra- and inter-regional contacts, we have collected contemporaneous dates with Cejkov from other sites in central and eastern Europe, working with a time...
interactions. It is to this end that we present the following data set of potential contemporaneous sites within central and eastern Europe.

In considering the possible social landscape of late Upper Paleolithic central and eastern Europe, we present those sites for which published 14C dates are available, rather than relying on suggested date ranges based on typology of recovered archaeological materials. We include only sites with dates that have confirmed laboratory numbers, although we are aware of the need for a certain degree of caution if only a single date is available. Whenever the information is available, we also include the type of dated material (information that is still far too scarce) to allow for the possibility of evaluating the reliability of the date and considering the potential contaminants. The data included covers both central and eastern Europe in order to suggest possible contacts, exchanges and/or social interactions. This is not to exclude the possibility of contacts between groups located in western and southern Europe and those inhabiting central and eastern Europe, but rather highlighting areas that have not received as much attention in previous discussions. The distances considered in this essay range from adjacent sites 2–5 km apart (e.g., Dolní Věstonice, Pavlov, Milovice), to those separated by moderate distances under 100 km (e.g., Alumperdorff and Willendorf, Alumperdorff and Dolní Věstonice, or Mitoc Malu Galben and Korpatch), and finally to those separated by longer distances over 100 kms (e.g., Cejkov and Krakow-Spadzista, which are 224 km apart; Tables 6–7).

SIMILARITIES AND DIFFERENCES IN SETTLEMENT PATTERNS IN CENTRAL AND EASTERN EUROPE

The currently best known Upper Paleolithic locations in Germany are cave sites, predominantly in the south, along the Danube and its tributaries, such as Bockstein Torle, Obere Klause, or Hohle Fels (see Fig. 1). However open air sites are becoming better known in southern Germany, such as Salching and Steinacker, and the Rhineland, such as Rhens, Wildscheuer, Mainz-Linsenberg, and Spredlingen (Scheer, 2000). Until recently the greatest focus in this area has been on Aurignacian and Magdalenian
Table 6

Central and east European contemporaneous sites 25-22 Kyr B.P.

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### Central and east European contemporaneous sites 25-22 Kyr B.P.

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Table 6 continued

Central and east European contemporaneous sites 25-22 Kyr B.P.

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<td>layer 24</td>
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Central and east European late Gravettian locations

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<th>Location</th>
<th>Altitude (m)</th>
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<td>Kniegrotte</td>
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<td>371</td>
<td>Cave, Thuringia</td>
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<td>410</td>
<td>Cave, Bavaria</td>
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<td>4</td>
<td>Geissenklosterle Ir</td>
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<td>Cave</td>
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<td>Hohle Fels lib</td>
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<tr>
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<td>Predmosti II</td>
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<tr>
<td>14</td>
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<td>Petrkovic</td>
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<td>Cejkov</td>
<td>Lat. 48°28′N Lon 21°46′E</td>
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<td>Krakow Spadzista</td>
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<td>Open air Middle Desna river bank</td>
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</table>

settlements, with the assumption that Gravettian ones were either rare or absent. However, research in the last decade has shown occupation during the Gravettian as well (see e.g., Hahn, 2000; Scheer, 1993, 2000; Street and Terberger, 2000) encouraging exploration of possible contacts between regions. The main difference between this region and more eastern sites is the location of Gravettian sites in caves, an uncommon settlement pattern in the rest of central and eastern Europe. Raw material acquisition in western central Europe also appears more localized (Féblot-Augustins, 1993, 1997; Scheer, 1993, 2000), or confined to western Danube valley and its tributaries, with the river valley serving as the main transportation route. However, Scheer also documents communication between groups that occupied Hohle Fehls, Geissenklosterle and the Black
Forest region to the west (Scheer, 2000:263). Contacts between southern Germany and upper Rhine valley are also well documented on the basis of raw material sourcing, and should provide a solid ground for further exploration of social networks and exchanges (Hahn, 2000; Scheer, 2000).

The majority of sites in Austria, Czech and Slovak Republics display similar settlement pattern of open air sites in slight elevations above river valleys. Despite this similarity the Gravettian locations also display interesting differences in occupational duration, raw material acquisition, and possibly social networks (for detailed studies see entries in Roebroeks et al., 2000; Svoboda and Sedláčková, 2004). The proximity between eastern Slovakia and the Ukraine – 106 km between Cejkov and Korolevo, on one hand, and sites in Moldova and Romania – 52 km between Mitoc Malu Galben and Korpatch, is a topic that

<table>
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<tr>
<td>30</td>
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<td>Lat 51° 39' N Long 85° 06' E</td>
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<td>Lat. 51° 25' N Long 112° 40' E</td>
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<tr>
<td>38</td>
<td>Shestakovo</td>
<td>Lat. 56° 30' N Long 88° 35' E</td>
</tr>
</tbody>
</table>

Fig. 10. Distribution of Siberian Late Gravettian sites (22–25 Kyr)
has received very little attention (for an exception see Hesaerts et al., 2003), and should be explored further in the future. The interesting absence of sites on the map of late Gravettian settlements is posed by the Hungarian Plain and Poland (Fig. 1; for a discussion of Pleistocene settlements in the Polish Carpathians see Valde-Nowak, 1991). While Hungarian Upper Paleolithic is well established at this point with confirmed dates from Aurignacian sites, and early Gravettian sites, such as Bodrogkeresztúr-Henye (14C: 28,700 ± 3000 B.P., GXY 195; 26,318 ± 365 B.P., Deb. 2555), Megyaszó-Szelesteto (14C: 27,070 ± 680 B.P., Deb. 5372), Püspökkhatvan-Diós Öregszolo (14C: 27,700 ± 300, Deb. 1901), Hont-Parassa III/Orgonás (14C: 27,350 ± 610, Deb. 5027) (Dobosi, 2000b), the next reliably dated time period appears only after 20 thousand years before present, such as Mogyorosbanya (14C: 19,930 ± 300 B.P., Deb 1169) (Dobosi, 2000b:232). The current paucity of dates between 25–20 Kyr B.P. in this region merits further exploration, particularly considering its proximity to eastern Slovakia where we now have evidence of settlements in this time range, along with the presence of raw materials from the Hungarian Plain.

Eastern Europe as presented here includes parts of present-day Russia continuing eastward into Siberia. This landscape is dramatically different from western and central Europe, particularly in terms of climate, ecology, and history of the landscape. The scale of physical features is likewise different, starting from the vastness of the east European Plain. Stretching from the Arctic Ocean in the north to the Black sea in the south, this lowland encompasses mainly low elevations that are drier and cooler than any areas of central or eastern Europe. Understanding the history of this landscape is an important part of any effort to evaluate the archaeology and human occupation
of adjacent regions. Consequently we include the Siberian Late Upper Paleolithic record as a significant reminder of the wealth of human occupation to the east of the Ural Mountains, and refer the reader to literature that focuses on the region in greater detail, and is increasingly becoming accessible to English speakers (e.g. Hoffecker, 1999, 2002; Vasil’ev, 2000; Vasil’ev et al., 2003; Table 8; Fig. 10).

CONCLUSION

In this work we have described initial results of our survey and excavations in eastern Slovakia in 2000 and 2001. To better situate the site of Cejkov we have also reviewed comparable dates from known Paleolithic sites in surrounding regions, and provide a summary of the results in order to facilitate the larger task of reconstructing prehistoric patterns of settlement during the time period. The recent increase in the number of securely dated sites in central and eastern Europe also provides a basis for a discussion of a possible variation in human adaptation to a worsening or unstable climate in central Europe (Soffer and Gamble, 1990; Roebroeks et al., 2000). The possibility of ecological niches that allowed either a continued occupation or periodic visits in the area is becoming increasingly accepted in Late Upper Paleolithic studies of Europe (Montet-White, 1994, Roebroeks et al., 2000). Our results from eastern Slovakia fit well within such an interpretive framework, clearly indicating widespread human presence in the region at a point 23–25,000 B.P. (Fig. 11).

Acknowledgements

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