

MEDIEVAL AND OTTOMAN PERIOD (14TH–17TH C.) ARCHAEOLOGY
IN THE DRAVA RIVER REGION, HUNGARY
RESULTS OF AN INTERDISCIPLINARY PROJECT

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Abstract: The paper is a short summary of the main archaeological outcomes of an interdisciplinary project in a section of the Drava river crossing the territory of Somogy county, in Hungary. One of the study areas is the vicinity of Berzence where medieval settlement patterns, land use and economy have been reconstructed on the basis of historical sources and an archaeological field survey. A comprehensive review of architectural history and material culture of the Ottoman Period stronghold in Barcs was the other area under investigation. Research there was based on written sources and the archaeological assemblage recovered from the palisaded fort. Zooarchaeological research at this site revealed some significant culture historical aspects of this stronghold. Underwater archaeological investigations carried out in the Drava river itself and aerial exploration of the study areas also supplied valuable archaeological results.

Keywords: Medieval Period, Ottoman Period in Hungary, interdisciplinary research, Drava region, aerial archaeology, medieval settlements, medieval land use, Ottoman stronghold, Ottoman Period zooarchaeology, underwater archaeology, Ottoman floating bridge, late medieval pottery

The Drava river region had formed a politically sensitive border zone between Hungary and Croatia, therefore it remained untouched by archaeological investigations for most of the 20th century. However, recent availability provided a good opportunity for new investigations and a project of several years' term started in 2008.¹ Interdisciplinary research covering three regions in Southern Transdanubia (western Hungary) was initiated to study medieval and Early Modern Age settlement patterns and environmental history as well as the material and mental cultures represented by castles and their catchment areas in the broader region.

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Fig. 1. A: Map of Hungary with the investigated section of Drava region;
B: View of Hungarian side in the Drava valley (the environs of Berzence)

The projects' themes included the evaluation of find materials from the medieval *castellum* of Ócsény (Tolna county) and the Ottoman Turkish palisade fort of Barcs (Somogy county) as well as the environmental survey of their surroundings. Participants in the program also investigated medieval settlement patterns, farming methods and landscape uses of medieval Berzence estate (Somogy county) (Fig. 1.A). In addition to traditional archaeological methods, field surveys were aimed at reconstructing the natural environment and settlement patterns. Aerial surveys and underwater archaeological reconnaissance were also carried out. Scientific analyses of environmental history were accomplished by P. Sümegi, the member of our team, and his colleagues.² Although this work could not cover all aspects of the related research topics, its parts have been connected across several subjects and the diverse approaches of the same problem helped raising new research questions.

This paper is a short summary of the main archaeological outcomes of the project accomplished along the section of the Drava river within the territory of Somogy county.

AERIAL ARCHAEOLOGY ON THE HUNGARIAN SIDE OF THE DRAVA RIVER (Zs. MIKLÓS)

Aerial exploration and photography are essential for the reconstruction of an area's settlement history. Earthworks, villages, and cemeteries can be found during flights performed in different seasons, under various light circumstances. Under the circumstances of conventional field walks these phenomena could be located only by the abundance of surface finds and the overall structure of the fortification or the village remains unknown.

Among others, we have executed aerial exploration and photographing on the Hungarian side of the Drava valley and its subsidiary valleys multiple times since 2008. It must be emphasized, that no such work could be done yet in this territory. Research has been particularly hindered by the Drava being a border river: the bends and backwaters that are partially in Hungary and partially in Croatia, are difficult to follow by airplane (Fig. 1.B). Furthermore the shores of the living river and the area between the dead river branches are covered by thick woods in the Drava valley: chances of identifying archaeological phenomena are relatively small there, even when the foliage is gone and the land is covered by snow. Geological characteristics also have an impact on the outcome of aerial photography. These factors make it essential to photograph an area several times a year, under various conditions of visibility.

Discovering new archaeological sites is obviously not the sole purpose of flights: photographing known villages and fortifications *en route* is equally important. We can not only monitor the changes in the condition of the sites, but it is also possible to record details undetectable during field work or by geodesic surveys. Aerial pho-

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tographs are also an excellent means in documenting the surroundings of archaeological sites. For example the former river and stream beds are clearly visible, while they are hardly noticeable or absolutely invisible at eye level while walking on the surface.

Satellite records are usable in general orientation and directing attention to a site, but in the absence of detail most of the accessible images are not suitable for research purposes. Therefore they cannot substitute for the low-altitude aerial exploration and photography of archaeological sites.

We photographed the following sites in the investigated locations multiple times:

Berzence–Várdomb [“Castle Hill”]: The late medieval *castellum* was alternately in Ottoman and in Hungarian hands in the 16th–17th century. Its references are known from the 15th to the 17th century. The traces of the former fortification can be best observed during defoliated periods and in snow on the hilltop now covered by trees and bushes.

Gyékényes–Vár (Alsó-Zákány) [“Castle”]: Written records of this castle are known from the 15th century: it was mentioned as *fortalitium seu castellum* in 1458. The shape and defences of the castle surrounded by a ditch became ever harder to observe on the surface because of tillage at the site, but it is still easily detectable on aerial photographs, especially on those made during ploughing or in snow (*Fig. 2.A*).

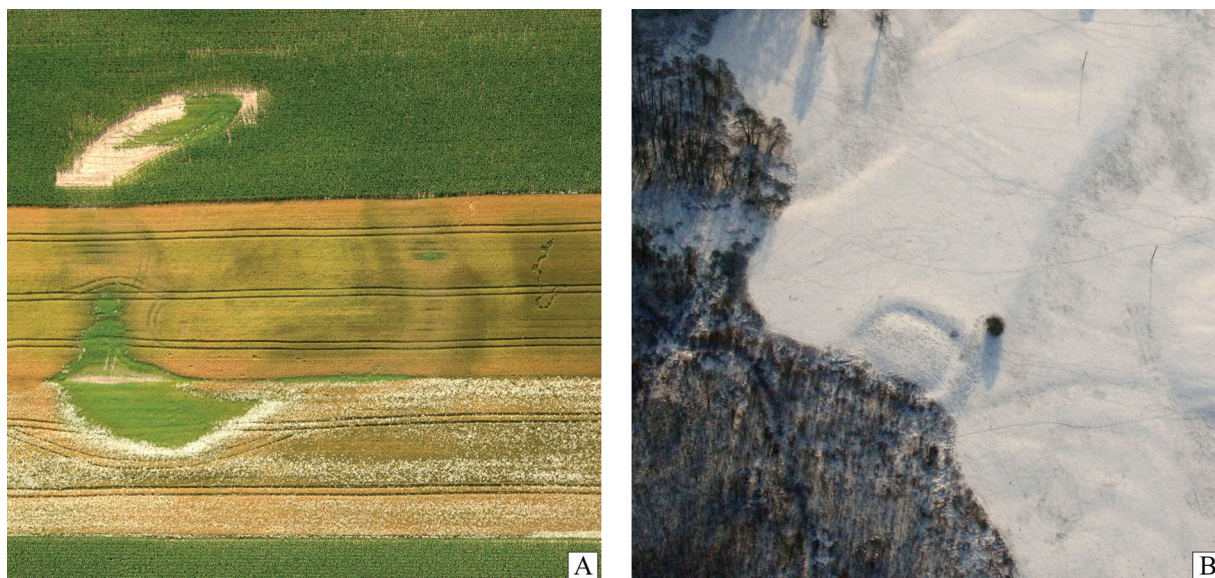


Fig. 2. A: Gyékényes–Vár (Alsó-Zákány) [“Castle”]; B: Péterhida–Pusztafalusi dűlő (Várhely) [“Castle site”]

Péterhida–Pusztafalusi dűlő (Várhely) [“Castle site”]: The site has no known written records, D. Jankovich-Bésán identified the traces of a village dated to the 16th–17th century, near an earthwork. According to Gy. Nováki, no ditch can be found on its side facing the forest, but on the other hand, it is clearly visible on aerial photographs (*Fig. 2.B*).³

Drávagárdony–Törökdomb [“Turkish Hill”]: Based on a record from 1603, M. Rózsás presumed that this fortification had served as a bridge head, a guard post for the short lived Turkish boat bridge at Drávatamási.⁴

³ K. MAGYAR–GY. NOVÁKI: Somogy megye várai a középkortól a kuruc korig (Castles of Somogy county in the Middle Ages and the Early Modern Period). Kaposvár 2005, 37–39, Fig. 64 (Berzence–Várdomb), 53–54, Fig. 62 (Gyékényes–Vár), 111, Fig. 77 (Péterhida–Várhely).

⁴ M. RÓZSÁS: A Turkish guard station on the lands of Drávatamási. In: *Archaeology of the Ottoman Period...* 2003, 145–150.

BERZENCE: SETTLEMENT AND LAND USE IN THE MIDDLE AGES ON THE BOUNDARY OF TWO MICROREGIONS
(Cs. ZATYKÓ)

Archaeological, historical, geomorphologic and geoarchaeological research were carried out in the program's Berzence sample area. Investigations focused on different aspects of medieval settlement structure and land use in the medieval Berzence estate. The study area is located on the boundary between two microregions. The diversity of geographical features, the exceptional abundance of written sources and the fact, that the area remained exempt from subsequent constructions, present an excellent possibility for the comparative study of settlement structure, characteristics of the local economy as well as land use.

This study is based on results from four research areas: the 14th century deeds concerning the division of the estate, that described the neighbourhood in exceptionally rich of detail; data from the archaeological sites recorded during systematic field walking; pollen-analyses of geoarchaeological sampling; and a geomorphologic survey. The research area is located on two, markedly different geographical units: the northern section of the sampling area, the hilly parts of Inner Somogy Hills, is covered by wind-blown sand. It is separated by an elevated bank of 8–10 meters height from the southern part, the flood plains of the Drava valley (*Fig. 3.A*).

The geomorphologic survey revealed a significant change in the floodplain area's hydrography after water regulation works in the 19th century. Before the construction of the Dombó Canal the former Drava-meanders of the lower parts had been covered by water, and swamps, dead channels and oxbow-lakes had formed in these locations. The water output of streams and springs was considerably higher then, because of the better water supply, the higher level of the water table and the less filled-in river beds.⁵

Two terriers of land division are available from 1377 concerning the environs of Berzence.⁶ One of them divides the arable lands, pastures, mills and four fish-ponds located on the river banks, belonging to Berzence between three landowners of the lower nobility. The other document, dated to the same time, contains the partial division of the now non-existent villages' territory on the southern floodplain. This description not only refers to meadow management, but mentions at least twenty fish-ponds and *geregye*⁷ besides the plots of land within the outskirts of the small villages. While fields and pastures were listed on the northern, higher part of Berzence, only a few mentions of arable lands can be found from the southern, inundation territory of the study area.

Our findings were similar during the archaeological field walking, pointing to the dual nature of the sampling area. A total of 118 archaeological sites containing – among others – medieval finds have been discovered as a result of systematic field surveys, covering 2940 hectares. When the higher northern and the lower southern areas of the site distribution map (*Fig. 3.B*) are compared, the difference between the two territories is clearly visible. In the floodplain many small sites characterized by low find densities (probably temporary habitations) can be seen dispersed between larger, village-like settlements. On the other hand, spacious areas without archaeological sites separate the large settlements on the northern, hilly river banks. The more significant settlements of the southern area lined the banks of the Zsdála stream, once connected to the Drava river. Typically, the smaller sites between them, were more evenly distributed on the elevated, western part of the inundation area (altitude: 118–120 m). Meanwhile they are lined up along the meanders and oxbow-lakes in the lower-lying, eastern wetlands (altitude: 115–117 m).

Traces of minor settlements probably used only for a shorter period were found typically on the lower, alluvial plains. Finds referring to iron working, such as iron blooms, iron slags and fragments of *tuyères* (tubing through which air is blown into smelting furnaces) were found on several sites here, which shows that the local bog iron had been processed on location (*Fig. 4*). The formation of bog iron typically happens under reducing atmosphere, in marshy areas with high water-table, such as this territory was during most of the Holocene. The close proximity of forests had surely played a significant role because of the high demand for firewood in iron processing.

⁵ I. VICZIÁN–Cs. ZATYKÓ: Geomorphology and environmental history in the Drava Valley, near Berzence. *Hungarian Geographical Bulletin* 60 (2011) 4. 366.

⁶ MOL (National Archives of Hungary) DL 6418, MOL DL 6419; BORSA 1999, 32–36.

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⁷ BORSA 1999, 36. "...capture piscium vulgo gerege..."
The word "*geregye*" means a fish trap used in waters of slow current. It was made of twigs woven around stakes.

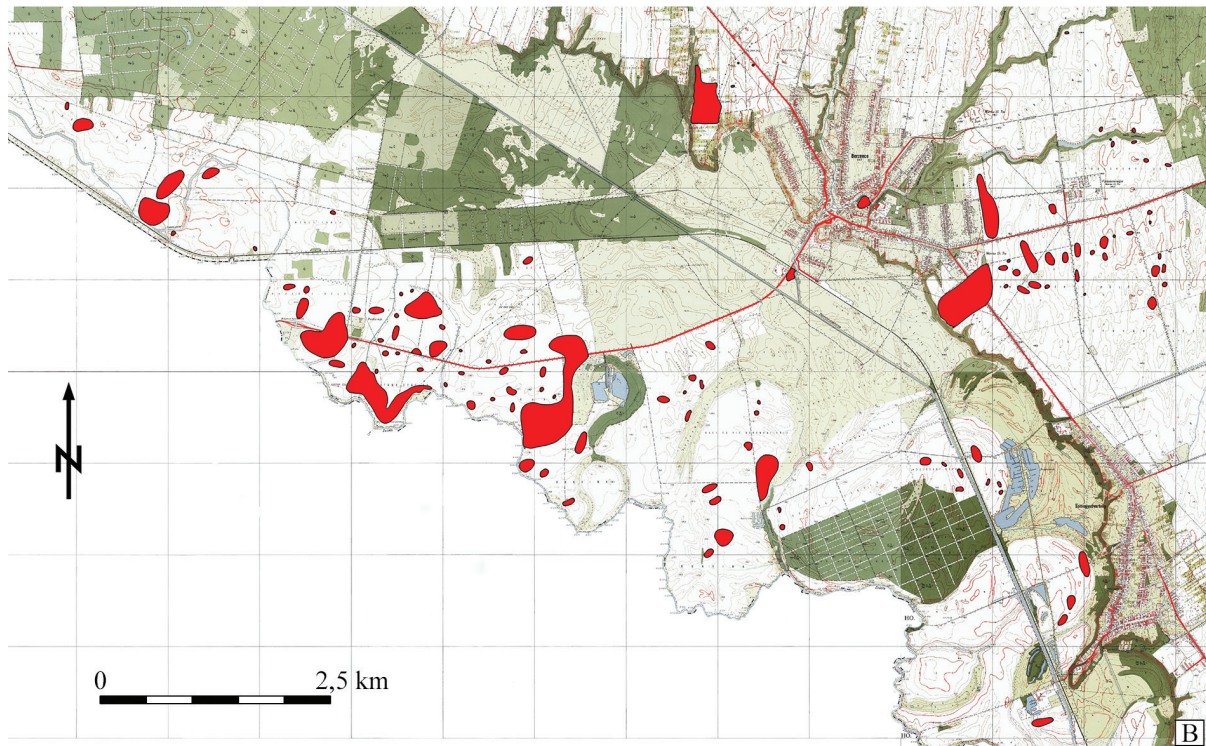
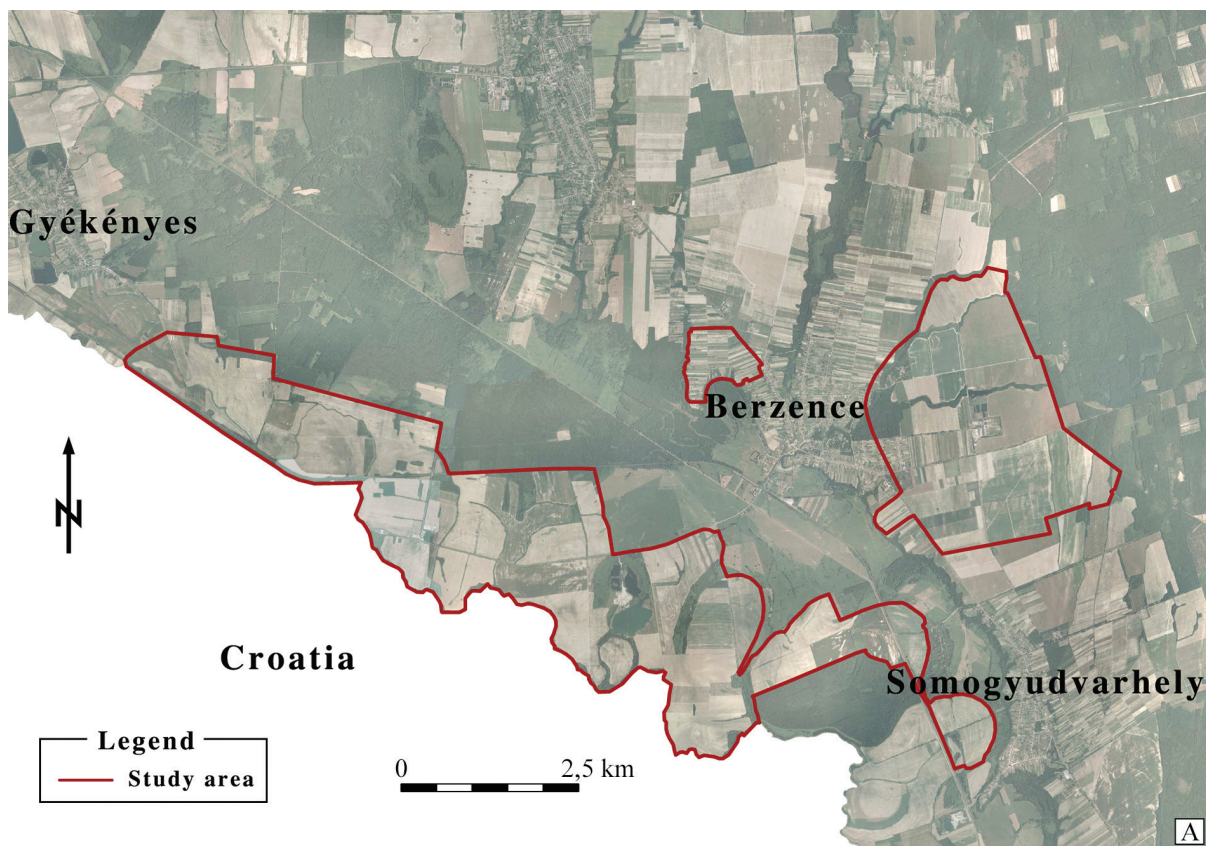


Fig. 3. Berzence and its surroundings. A: Study area; B: Site distribution map

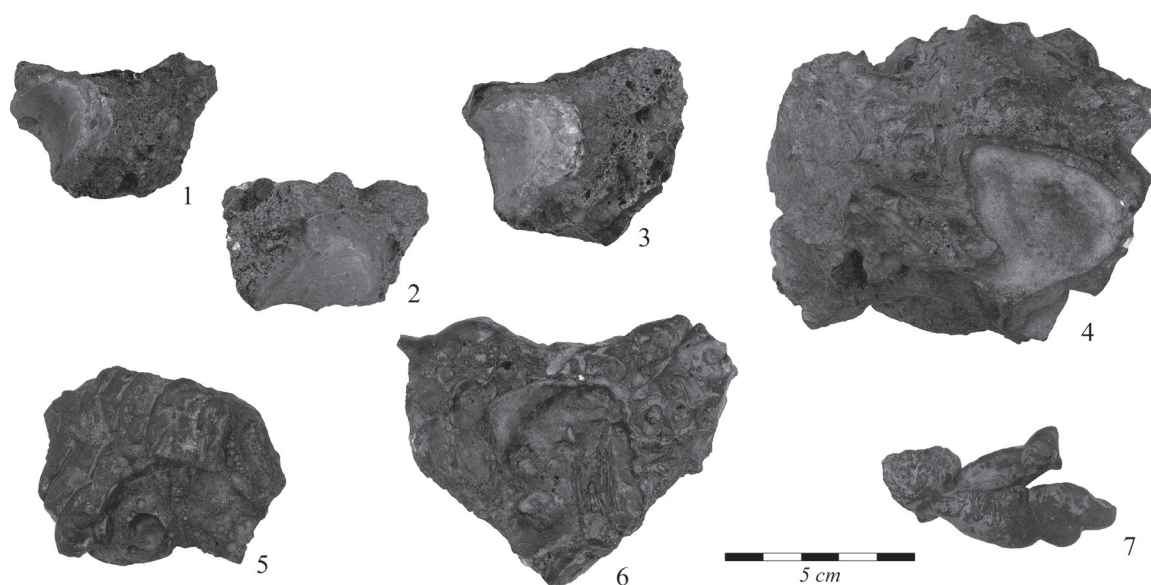


Fig. 4. Berzence and its surroundings. Finds related to iron working. 1–3: Pieces of tuyères embedded in slag; 4–7: Slag

Consequently, the sample area shows differences in settlement structure and land use as a result of the distinct geographical conditions in the two bordering microregions. Economy in the northern part on the elevated river banks was dominated by cereal production and plough farming. At the same time surveys indicated the presence of meadow management, fishing in the oxbow-lakes and iron smelting in the former floodplains of the Drava river. Different settlement patterns could also be reconstructed for the two territories. Large, village-like settlements were characteristic of the elevated banks, while a broad network of small, probably temporary habitats was found between the more significant settlements on the inundation area.⁸

BARCS: A NEW OTTOMAN STRONGHOLD BY THE DRAVA RIVER

(GY. KOVÁCS – M. RÓZSÁS – K. ÉDER)

The palisade castle of Barcs was part of the line formed by Ottoman border fortresses along the northern bank of the Drava river between Szigetvár and Babócsa. It was built directly on the banks of the Drava, its protection strengthened by the surrounding woodland and swamps. The stronghold was built in 1567 after the Ottoman occupation of nearby Szigetvár. It was burnt down twice, once in 1595, during the Fifteen Years War and in 1664, during the Winter Campaign of Miklós Zrínyi, when the palisade was completely abandoned.⁹ Until 1567, the Ottoman flotilla on the Drava river had been stationed in Eszék (Osijek), then it was ordered under the newly built fort at Barcs.¹⁰

⁸ Cs. ZATYKÓ: Fire, water, earth: archaeological and historical data on complex landscape utilisation in the Drava Valley. *Hungarian Archaeology*. E-journal. 2012, Winter http://www.hungarianarchaeology.hu/?page_id=279#post-3261

⁹ About the history of the Ottoman stronghold and its archaeological research, see GY. KOVÁCS – M. RÓZSÁS: A barcsi török palánkvár (The Turkish hoarding castle of Barcs). *SMK* 12 (1996) 163–182; KOVÁCS – RÓZSÁS 2010, II: 621–642.

¹⁰ In the negotiations preceding the Adrianople (today Edirne) peace treaty in 1568 demolishing the freshly built Ottoman Barcs castle (along with those of Babócsa and Berzence) was suggested. The destruction of these castles had not been carried out. The

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War Council in Vienna thus had to reorganise the military defences of the Mura region against Ottomans. One of the centres of the new border-defence system was Bajcsavár/Weitschawar. It was built in 1578 with Styrian funding and served by a Hungarian-Croatian-Styrian garrison. The onetime royal Bajcsavár (Bajcsa village belongs to Nagykanizsa) is the archaeologically most extensively studied palisade stronghold from Ottoman Period in Hungary. GY. KOVÁCS (ed.): *Weitschawar – Bajcsa-Vár. Egy stájer erődítmény Magyarországon a 16. század második felében*. Zalaegerszeg 2002. In German: D. KRAMER (Hrsg.): *Auf Sand gebaut Weitschawar / Bajcsa-Vár: eine steirische Festung in Ungarn*. Graz 2005.

It was withdrawn during the Fifteen Years War at the latest. New environmental history studies in the project show that the filling-in of the Drava riverbed under the fort began by the late 16th century.¹¹ For that reason, the fleet could no longer be stationed there during the 17th century.

In administrative terms, the Barcs stockade belonged to the Szigetvár *sandjak* in the *vilayet* of Buda until 1600, then it has been assigned to the *vilayet* of Kanizsa. Its garrison consisted of 160–220 men. Most of them were footmen called *azabs* or *martaloses*, ordered to fleet or coastal duty. A minority of the crew were cavalry and artillery. According to Ottoman pay-rolls, most of the soldiers were of Balkanic origin. A record shows that soldiers arrived from three castles in the vicinity (Verőce, Brezovica, Moslavina) and Sopje to Barcs and Szigetvár.¹²

Only one contemporary depiction of the Barcs stronghold is known, which has survived in the *Mars Hungaricus* of Pál Esterházy.¹³ It is a sketch of the ground plan from 1664, the time of its destruction (Fig. 5). As indicated by field walks and archaeological research, the drawing, although dubious in its details, is among the more-or-less authentic depictions from that era.¹⁴

Test excavations were carried out between 1989–1994. An opportunity to excavate a larger surface followed in 2002–2003. The archaeological data have confirmed that the fort had been a newly built palisade structure and two, clearly visible destruction layers served as evidence for its burning down in 1595 and 1664.

According to the known sections of the walls, the stockade was located on the banks of the Drava oriented NW–SE at the time. Its territory was approximately 90 by 70 m, namely 0.6 hectares of which 1500 m² have been excavated. In the 16th century the castle's wall was an 1.5 m wide palisade filled in with earth between two rows of posts. The 17th century palisade, at least in certain sections, was made of a single row of posts. We have unearthed the post-ditches that showed the traces of these posts. On the basis of ground plan reconstructions and the postholes, approximately 1100–1200 posts may have been needed just for the four palisade walls and defence works.¹⁵

In both periods, buildings in the palisade castle consisted of wooden structures, plastered with clay and covered by planks on the inside. Some 17th century remains in the northern section of the excavation area pointed at more or less regular rooms. These dwellings had been heated by tiled stoves. Almost twenty stove bases (not all of them dating to the same period) came to light, together with quantities of stove tiles and clay debris. This made the reconstruction of stoves possible. The stove bases outlined a NW–SE oriented row of rooms, but the walls of these rooms could not always be found. The concentration of sherds of glazed stove tiles probably shows the estimated location of the 16th century principal's building.

Tens of thousands of finds have been unearthed during the excavations. In 2003 alone over 30,000 pieces were found excluding animal bones. Many objects can be precisely dated based on stratigraphy. Quantities of melted, deformed pottery and burnt through metal finds show that the palisade and other wooden structures must have been ablaze for days, after they had been set on fire.

The rich find material of this stronghold offers a glimpse on the soldiers' everyday life, their activities within the walls and it reflects connections with the surrounding area such as the reliance on craft industries at settlements that supported the fort (Fig. 6). The vicinity of important trade routes¹⁶ also had an effect on the material culture and food supply of the garrison. At the same time the material is well comparable with the data of the Ottoman pay lists, which show a majority of soldiers of Balkanic origins. The Balkanic influence on material culture is represented by the remains of tiled stoves with rectangular bases and octagonal upper parts, the massive baking lids lined with small pebbles, the pots and jugs made on a hand-turned wheel. Parallels to these objects can be found

¹¹ P. SÜMEGI: Jelentés a "Településrégészeti és környezet-történeti kutatások a Dél-Dunántúlon (14–17. század)" című K-72231 számú OTKA pályázatban vállalt régészeti geológiai munkák 2012-ben történő teljesítéséről. [Report on the completion of the geoarchaeological works in 2012 for the project "Studies on settlement archaeology and environment history in the Southern Transdanubia, 14th–17th centuries", supported by Hungarian National Research Fund (OTKA, No. K 72231).]

¹² K. HEGYI: A török végvár [The Ottoman border fortress]. In: Szigetvár története. Eds.: S. Bősze, L. Ravazdi, L. Szita. Szigetvár 2006, 97. ; HEGYI 2007, II.: 1327–1329, III.: 1590–1594.

¹³ Esterházy Pál *Mars Hungaricus*. Edited and translated by E. Iványi. Ed.: G. Hausner. Zrinyi-könyvtár 3. Budapest 1989, 140. (MOL T.2. XXXII. 1046.)

¹⁴ KOVÁCS-RÓZSÁS 2010, II. 630–631.

¹⁵ GY. KOVÁCS-P. SÜMEGI: Palánkvárak, fák, erdők. Régészeti és környezet-történeti adatok a török kori palánkvárak faanyag-felhasználásához (Palisade castles, trees, and forests. Archaeological and environment history data on the timber used for Turkish-era palisade castles). In: Várak nyomában. Tanulmányok a 60 éves Feld István tiszteletére. Eds.: Gy. Terei, Gy. Kovács, *et al.* Budapest 2011, 115.

¹⁶ G. PÁLFFY: The Kingdom of Hungary and the Habsburg Monarchy in the Sixteenth Century. East European monographs 735. New York 2009, 384.

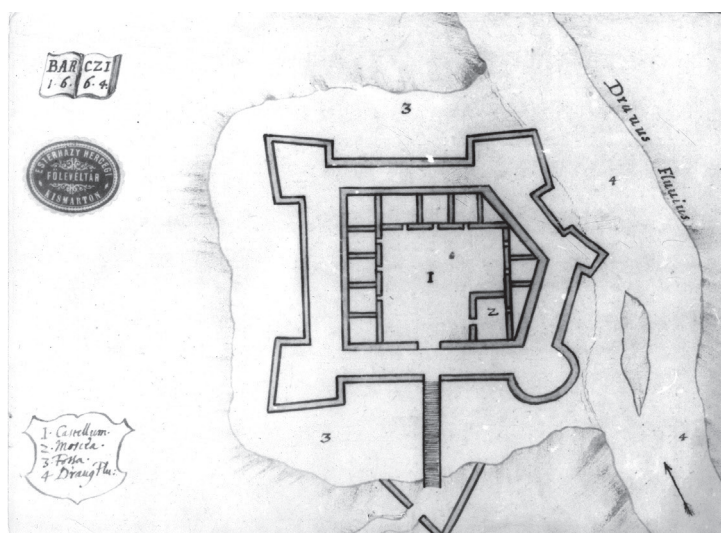


Fig. 5. Pál Esterházy's sketch of the Ottoman stronghold in Barcs.
National Archives of Hungary, T. 2. No. 1046
(photograph by E. Czikkely Nagy)

among the medieval and Early Modern Age pottery from the Balkans (their proportion in the find material from Barcs is over 50%). Fragments of a few Iznik ceramics, Chinese porcelain cups and western (Styrian, Austrian) import ware could also be identified among the mostly unglazed kitchen ware and glazed table ware.¹⁷

Numerous parallels could be found to the diverse ceramics of Barcs not only among the 16th–17th century pottery finds from Croatia,¹⁸ but also from Serbia. The integrity of Ottoman pottery, defined within the frames of the Ottoman Empire and based immensely on Roman and Byzantine traditions, is well demonstrated by finds from Barcs as well as Belgrade. Although Barcs is a provincial site and Belgrade is a representative urban centre, there are stylistic elements shared between their material (see for instance some sgraffito

bowls ornamented with leaves, painted glazed pottery, amphora-like two-handed jars, lids, glazed stove tiles etc.)¹⁹ The aforementioned trade routes of Southern Transdanubia had evidently played a role in mediating these remarkable similarities, especially the road that ran on the northern bank of the Drava river. This route must have facilitated closer relations between Belgrade and the Ottoman castles and settlements upstream the river.

The composition of other find groups, especially of metal artefacts is basically similar to the material of other castle excavations, although it shows some specific characteristics. The accessories of clothing and attire and small, personal objects (bronze buttons, clay tobacco pipes, jack-knives, knives, bone comb, pen holder, inkwell) can also be found amid kitchen utilities. The latter group includes copper vessels (footed bowls and jars) as well. The Styrian knives were typical trade goods of that era. A belt plaque made of walrus-tusk, probably datable to the 16th century, is a unique find in Hungary,²⁰ as well as a small bronze seal with Arabic letters²¹ and a weight for scales are also rare artefacts from dated levels. Parts of horse gear, such as *phalerae* and horse shoes hint at the presence of cavalry, also known from the pay lists. The fact that the Barcs fort was built by a river is demonstrated only by a few nails used in ship-building (*iszkába*) that came from 16th century layers. Weapon finds were also scarce. The large number of nails, lock hinges, iron keys and the screw key padlocks belonged to composite structures, while the tools (axes, hatchets, puncheons, drills, scissors, etc.) refer to the building works as well as agriculture and craft activities including that of a blacksmith.

In Hungary, only the Ottoman palisade fort of Újpalánk (*Yeni Palanka*) nearby Szekszárd was fully excavated in the 1970s–1980s by A. Gaál and his team.²² The state of research otherwise is more mosaic-like, consisting fragmentary information. The results of archaeological research at the Barcs palisade play an important role in the evaluation of the Turkish find material in Hungary because of the large extent of the excavation area and the result-

¹⁷ Gy. KOVÁCS: Iznik pottery in Hungarian archaeological research. In: *Turkish Flowers. Studies on Ottoman Art in Hungary*. Ed.: I. Gerelyes. Budapest 2005, 72, Ill. 4; Gy. KOVÁCS: Cultural contacts of a Turkish fort on the Drava river – The testimony of the glazed pottery. *Hungarian Archaeology. E-journal*. 2012, Autumn. pp. 1–4. http://www.hungarianarchaeology.hu/wp-content/uploads/2012/11/eng_KovacsGy_1201.pdf

¹⁸ We found close parallels to pots, lids and stove tiles in the 15th–17th century Croatian material. See for example M. RADIĆ–Z. BOJČIĆ: *Srednjovjekovni grad Ružica [The Medieval Burg of Ružica]*. Osijek 2004, *passim*, for example cat. nos. 307, 320, 327, 331, 464–482, 489; L. MIKLIK–LOZUK: *Stružani – život naselja kroz*

stoljeća [A long continuity settlement, Stružani]. Slavonski Brod 2012, cat. nos 228, 231–232, 234–236, 239–241, 243–246.

¹⁹ See V. BIKIĆ: *Gradska keramika Beograda (16–17. vek) / Belgrade Ceramics in the 16th–17th Century*. Beograd 2003, 19–93.

²⁰ E. GÁL–GY. KOVÁCS: A walrus-tusk belt plaque from an Ottoman-Turkish castle at Barcs, Hungary. *Antiquity* 85(329) 2011: Project Gallery. <http://antiquity.ac.uk/projgall/gal329/>

²¹ Inscription: “*Ömer bin Abdullah bende-i Hayy [...]*”. Reading by B. Sudár, thanks for his help.

²² A. GAÁL: Turkish palisades on the Tolna county stretch of the Buda-to-Eszék road. In: *Archaeology of the Ottoman Period...* 2003, 105–108.



Fig. 6. Finds from the Ottoman stronghold of Barcs

ing quantity and quality of finds. The material shows close connections to those of other Ottoman forts in Hungary, especially in Southern Transdanubia (mainly Babócsa, Szigetvár, and Pécs, although their material is less published). This material is of interest to researchers working in regions south of the Drava river, because of its historical, culture historical and technical relations.

ANIMAL BONE FINDS FROM THE OTTOMAN PALISADE CASTLE OF BARCS (E. GÁL – L. BARTOSIEWICZ)

Almost 10,000 animal bones have been unearthed during the excavations. Skeletal remains of domestic animals (96.36%) form the majority of these finds. Most of them are cattle bones (76%), while the remains of domestic hens have come to light in the second largest number (9.45%). Almost the same percentage of caprines (mostly non-distinguishable sheep or goat) bones was found. The proportion of sheep to goat is 3:1 among the bones of identifiable species. Despite the fact, that pig exploitation was of high importance in floodplains,²³ pig bones are strongly underrepresented among the remains of meat-purpose domestic animals (0.55%). This clearly refers to the diet of the castle's inhabitants, which was determined by Islamic religious tradition.²⁴ Similarly, the bone finds of non-meat-purpose domestic animals (horse, dog and cat) and wild animals were scarce.



Fig. 7. A: “Copper sheep” horn core showing chop- and cut-marks due to horn removal; B: Hornless sheep skull (left: frontal view; right: lateral view) from the Ottoman stronghold of Barcs

The dominance of adult cattle bones shows the importance of this species in the meat supply of the stronghold. The apparently large proportion of beef consumption may be related to the considerable seasonal resources provided through the vicinity of the south-western cattle trail that once also crossed the Drava near Barcs.²⁵ As has been demonstrated in a recent publication that summarized animal remains of 38 locations, cattle was the most frequently encountered meat-purpose animal at Ottoman Period urban and rural settlements, as well as in forts. The horn core finds and calculated withers heights are also indicative of various forms.²⁶ Caprines (sheep and goats) and domestic hen contributed comparable numbers of bones to the assemblage.

²³ L. RÚZSÁS: Barcs a feudalizmus korában [Barcs in the period of the feudalism]. In: Barcs múltja és jelene. Ed.: O. Bihari. Barcs 1979, 10.

²⁴ According to the pay lists, there were many Muslims among the soldiers. HEGYI 2007, II. 1328, III. 1591–1594.

²⁵ L. BARTOSIEWICZ: Turkish Period bone finds and cattle trade in south-western Hungary. In: *Historia animalum ex ossibus*.

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²⁶ L. BARTOSIEWICZ: Animal exploitation in Turkish Period Hungary. OTIVM 5–6, 1997–1998, 36–49; L. BARTOSIEWICZ – E. GÁL: Animal exploitation in Hungary during the Ottoman Era. In: *Archaeology of the Ottoman Period...* 2003, 365–376; VÖRÖS 2003.

According to the morphology of finds and calculated withers heights, the cattle belonged to a small, short horned type. The withers heights of bulls and oxen were also the lowest, compared to the average calculated for the Ottoman Period. Sheep were likewise small. Two types were identifiable: one similar to the prehistoric “copper sheep” showing a relatively robust horn formation (*Fig. 7.A*) and a rare hornless form (*Fig. 7.B*), not very widespread in Hungary at that time.

According to the negligible quantity of finds from wild animals, game must have been a rare dish on the castle’s menu. Similarly to other Ottoman Period sites red deer, roe deer and brown hare were the most commonly identified wild mammals.²⁷ Fish were probably also an opportunistic supplement to the castle’s meat supply, just like wild mammals and birds, although the small number of fish bones is firstly due to the lack of water-sieving during the excavations. The largest, easily visible bones of carp and pike show that the nearby Drava played a role in the food supply of the stronghold.

The animal bones from the palisade fort of Barcs form the richest known Ottoman Period archaeozoological assemblage in Hungary. Most of the bones are food refuse. There were only a few bones of non-meat-purpose animals in the material. Horses were tall and slightly gracile legged, compared to other Ottoman Period data. The withers height of one dog could be estimated. The 57.7 cm obtained correspond to the size of a modern-day Hungarian pointer (*vizsla*). The identified cat bones probably all originate from females.

The anatomical distribution of animal bones related the palisade fort’s meat supply show that livestock were butchered on the spot, as most body parts are evenly represented. Cattle bones often carry heavy hack marks, especially on robust skeletal parts. The good preservation of the finds, including the unusually large number of poultry bones, refer to the fact that food waste was buried relatively quickly, precluding damage by trampling or weathering on the open surface.

UNDERWATER ARCHAEOLOGICAL INVESTIGATIONS – REMAINS OF AN OTTOMAN FLOATING BRIDGE AT DRÁVATAMÁSI
(A. J. TÓTH)

Mapping remains of the Ottoman floating bridge at Drávatamási was carried out in part independently, but always within the context of our project and partly within the framework of international cooperation.²⁸ The site has been known since 1993, due to work by M. Rózsás (*Fig. 8.B*), but no diving for scientific purposes was possible for a long time, because of the Drava river’s border position. However, changing political relations have improved research possibilities as well.

Archaeological investigations of underwater sites in the Drava river began in 2005 by the archaeological survey of the site at Drávatamási–Kenderáztató. A research program of six seasons showed that – containing the remains of 32 log boats – this location is Europe’s largest known boat burial ground. We mapped the site, surveyed the details of the boats’ manufacturing and took samples from the wood of the hulls for dating (*Fig. 8.C*).

It became clear, that trees for the boats had been cut down in the neighbouring forests in the last years of the 16th century at the earliest. This information seems to compare well with a record in Gergely Pethő’s chronicle, who reported, that the Hungarians had destroyed the Turkish bridge at Drávatamási during a raid in 1603. According to the shaping of the log boats, the Turkish copper vessels found beside them (*Fig. 8.A*) and the timber used to connect the boats it is probable, that the aforementioned bridge was a pontoon-structure and we have found its remains.

The site survey has also shown, that due to specific hydrological qualities of the riverbed, this section was constantly in use and it had functioned as a “find-trap”. It can be confirmed in archive maps, that despite regulations, the current riverbed is identical in this section with that of the Early Modern Age and probably with earlier, undocumented riverbeds as well. There is a hard, loamy shallow on the bottom of the fast flowing river in front of its left bank that breaks steeply to a depth of 6–8 metres. By average water-level, the river was only knee-high at this shallow. This could have been the reason for using the secure section of the river for hemp retting. Big quartzite

²⁷ VÖRÖS 2003, 353, Table 1.

²⁸ A. J. TÓTH: Adatok a kora újkori közép-Duna-medencei hajók régészetéhez (Data on the archaeology of Early Modern Age ships in the Middle Danube Basin region). In: *A középkor és a kora újkor régészete...* 2010. II: 879–880. See also A. J. TÓTH: A magyar

víz alatti régészet helyzete és lehetséges jövője (Underwater archaeology at present and in the future in Hungary). *Magyar Múzeumok* 13:1 (2007) 45–47, and A. J. TÓTH: La Drava (Hongrie) – un fleuve inconnu. *Dossiers d’Archéologie* 331:janvier (2009) 46–49.

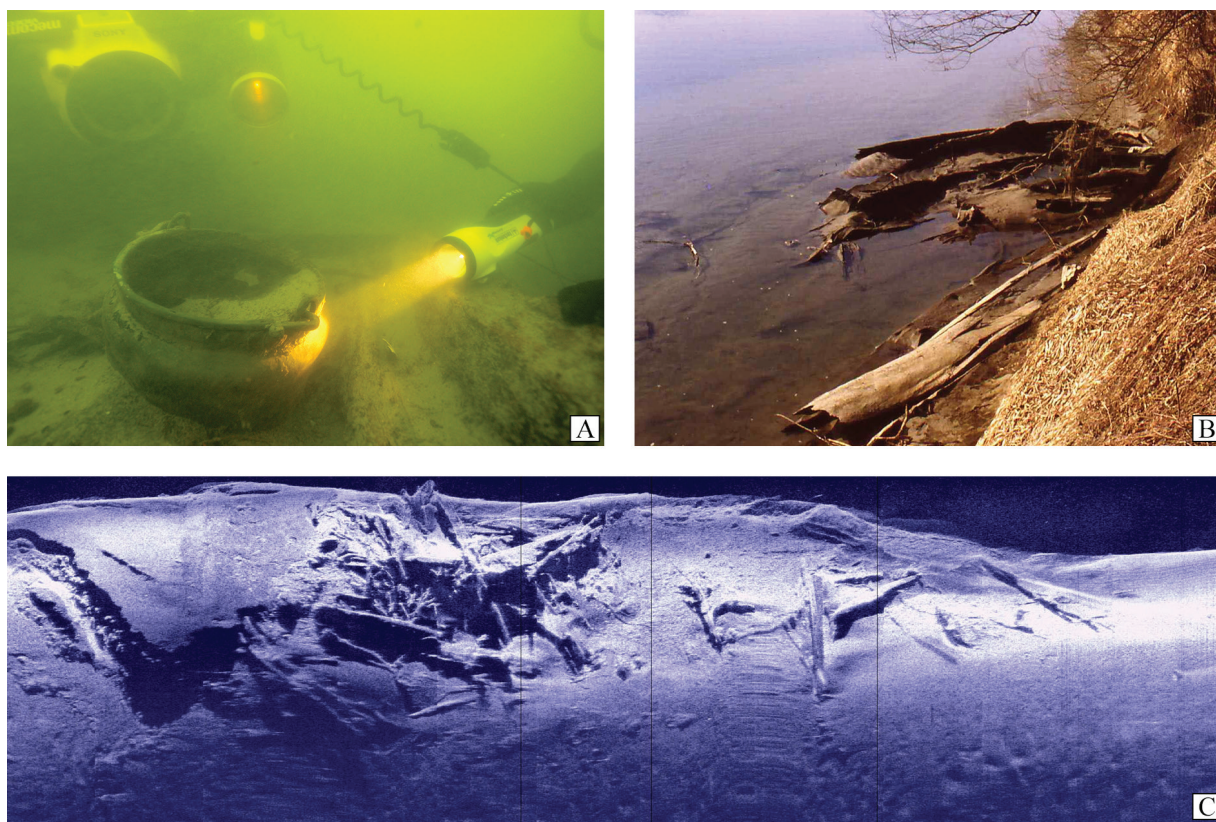


Fig. 8. Drávatomási–Kenderázta site. A: Turkish copper vessel found beside the logboats; B: Remains of logboats at Drávatomási, 1996 (photograph by M. Rózsás); C: Detail of a sonar image of the Hungarian side of the site, 2009

pebbles, broken in half and modern bricks show the traces of this activity on an extended patch – they were used for weighing down the hemp. Fragments of many modern eating and drinking vessels (including almost intact ceramic dishes) came to light in good condition from this area. An 18th century ornate battle axe was also collected in the winter of 2011, when the shallow completely dried out.

The log boats and the sand heaps by the steep of the shallow cover remains of a plank boat of unknown age. As indicated by the preliminary investigations, this boat shows a unique variety of planking using iron nails, which is considered special in this area.

SETTLEMENTS IN THE VICINITY OF BARCS: LATE MEDIEVAL POTTERY (M. Rózsás)

In recent years we have studied the locations of medieval and Ottoman Period settlements in the proximity of Barcs as well as artefacts recovered from the area. Medieval pottery in the Middle Drava Valley represents a *terra incognita* in Hungarian ceramic studies, thus finds from these settlements provide important information. Shards from field surveys in the vicinity of Barcs indicate that the hand-turned wheel remained in use from the period of the Árpád Dynasty (11th–13th century) until the 15th–16th century in this area (Fig. 9). This differs from the general situation in Hungary, but it is not unusual in the territory south of the Drava river. It can be demonstrated that there is no connection between the local late medieval (14th–16th century) pottery thrown on a hand turned wheel and the Ottoman Period (16th–17th century) one. Vessels from Ottoman Period sites (the stronghold and the neighbouring settlements) did not follow the pottery shapes known in medieval villages that had been abandoned by the time of the Ottoman occupation. They came to represent new types.

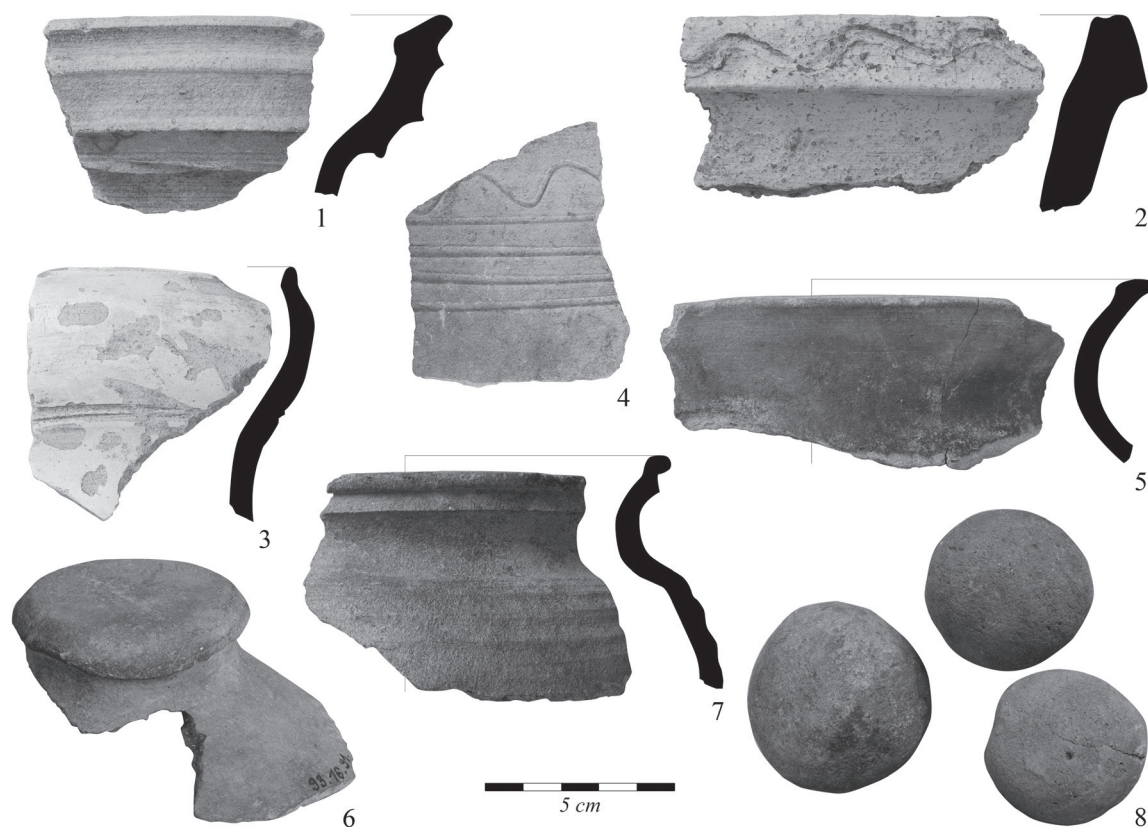


Fig. 9. Medieval ceramic shards from the Barcs–Vukovári mező site

The Ottoman palisade fort undoubtedly received part of its supplies from the areas south of the Drava. This is why studying 16th–17th century pottery from the Drava river region shared by Hungary and Croatia is indispensable in investigating this question. The identification of production places for the ceramic vessels found in the Ottoman Period of Barcs can be helped using petrographic analyses by A. Kreiter.²⁹

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