

Abhandlung

Przemysław Dulęba*, Renata Abłamowicz, Agata Sady-Bugajska, Jacek Soida

The economy of the La Tène culture communities based on the example of research from Upper Silesia

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Zusammenfassung: Ausgrabungsergebnisse zeigen, dass sich die Gemeinschaft der La Tène Kultur, die in der Eisenzeit in der Mikroregion des heutigen Dorfes Samborowice (Oberschlesien, Polen) lebte, nicht von anderen Gruppen Mährens und dem mittleren Becken der Donau unterschied. Ziel des Beitrages ist es, Merkmale der lokalen Wirtschaft anhand neu gewonnener archäobotanischer und archäozoologischer Quellen zu identifizieren. Die Ergebnisse bezüglich einer Reihe von Getreidesorten, die ansonsten für mitteleuropäische La Tène-Siedlungen charakteristisch sind, legen nahe, dass in der betrachteten Region noch kein Wechsel bei der Auswahl der Getreidesorten erfolgt war. Das Subsistenzmodell der hier nachgewiesenen Bevölkerung basierte auf Landwirtschaft und Viehzucht, wobei Rinder die wichtigsten Tiere waren, gefolgt von Schweinen und kleinen Wiederkäuern.

Schlüsselworte: Polen, La Tène-Kultur, Siedlung, Archäozoologie, archäobotanische Studien

Abstract: The results of excavations show that the La Tène culture community which inhabited the microregion of the contemporary village of Samborowice (Upper Silesia, Poland) in the Iron Age did not differ from its brethren from the area of Moravia and the middle basin of the Danube. Our intention is to try to identify the most important features of local economy based on newly acquired archaeo-

botanical and archaeozoological sources. The results from Samborowice in the form of a set of cereals characteristic of La Tène culture settlements from Central Europe suggest that the set of remains being analysed comes from a period when changes to the selection of cereals had yet to occur. The population in this period of history applied a model of economy based on agriculture and livestock rearing, with cattle being the most important animals, followed by pigs and small ruminants interchangeably.

Keywords: Poland, La Tène culture, settlement, archaeozoology, archaeobotanical studies

Résumé: Les résultats des fouilles montrent que la communauté culturelle de La Tène qui habitait la microrégion du village contemporain de Samborowice (Haute-Silésie, Pologne) à l'âge du fer ne différait pas de ses frères de la région de Moravie et du bassin moyen du Danube. Notre intention est d'essayer d'identifier les caractéristiques les plus importantes de l'économie locale sur la base de sources archéobotaniques et archéozoologiques nouvellement acquises. Les résultats de Samborowice sous la forme d'un ensemble de céréales caractéristiques des établissements de culture de La Tène d'Europe centrale suggèrent que l'ensemble des restes analysés provient d'une période où les changements dans la sélection des céréales n'étaient pas encore intervenus. La population de cette période de l'histoire a appliqué un modèle d'économie basé sur l'agriculture et l'élevage, les bovins étant les animaux les plus importants, suivis de manière interchangeable par les porcs et les petits ruminants.

Mots clés: Pologne, culture de La Tène, l'habitat, archéozoologie, études archéobotaniques

Abstrakt: Wyniki badań wykopaliskowych pokazują, iż społeczność kultury lateńskiej zamieszkująca mikroregion w okolicach współczesnej miejscowości Samborowice (Górny Śląsk, Polska) nie różniła się od swoich pobratymców z obszaru Moraw oraz środkowego dorzecza Dunaju.

*Corresponding author: Dr. Przemysław Dulęba, Uniwersytet Wrocławski, Instytut Archeologii, ul. Szewska 48, 50-139 Wrocław, Poland. E-mail: przemdul@gmail.com

Dr. Renata Abłamowicz, Muzeum Śląskie w Katowicach, ul. T. Dobrowolskiego 1, 40-205 Katowice, Poland. E-mail: r.ablamowicz@muzeumslaskie.pl

Agata Sady-Bugajska M. S., Muzeum Śląskie w Katowicach, ul. T. Dobrowolskiego 1, 40-205 Katowice, Poland. E-mail: a.sady@muzeumslaskie.pl

Jacek Soida M. A., Muzeum Śląskie w Katowicach, ul. T. Dobrowolskiego 1, 40-205 Katowice, Poland. E-mail: jacek.soida@gmail.com

Naszym celem jest próba wskazania najważniejszych cech ówczesnej lokalnej gospodarki na podstawie nowych archeobotanicznych i archeozoologicznych źródeł. Wyniki badań z Samborowic w postaci szczątków zbóż charakterystycznych dla osad kultury lateńskiej z Europy Środkowej sugerują, że badany zbiór pochodzi z okresu, kiedy jeszcze nie nastąpiły zmiany w selekcji zbóż. Ludność w tym okresie stosowała model gospodarki oparty na rolnictwie i chowie zwierząt, spośród których najważniejszym gatunkiem było bydło, na przemian ze świnia i drobnymi przeżuwaczami.

Słowa kluczowe: Polska, kultura lateńska, osadnictwo, archeozoologia, archeobotanika

Introduction

Over the past decades, Iron Age archaeology in Poland has focused primarily on typological and chronological studies. Research into economy, settlement and landscape archaeology has been undertaken almost exclusively by researchers in the Neolithic and the Bronze Age. This comes as a great surprise as it was precisely the Iron Age, in particular its older stages, that saw a tremendous leap in civilisation. We owe it mainly to La Tène culture communities, which in Central Europe are associated with the Celtic tribes known from historical sources. It is thanks to the Celts that new technologies connected with pottery, agriculture, glass-making and especially production and processing of iron appeared in the area of contemporary Poland. It was the Celts who finally developed trade, which centred around the so-called “Amber Road”. It was also them who made the oldest discovered coins produced within the area of contemporary Poland. Rapid development of numerous crafts was largely the result of a high degree of advancement in agricultural and livestock production. This led to food surpluses, which enabled the functioning of highly specialised groups of craftsmen within local communities. The people living in rural settlements typical of the area of Central Europe likely combined farming with various kinds of production to meet their own needs and possibly the needs of their neighbours. It appears that only a small part of the community engaged in craftwork exclusively. This group of people included first and foremost those who had mastered the most advanced, and thus time-consuming fields. Little is known about the exact functioning of La Tène culture communities in Silesia in economic terms, which is why our intention is to try to identify the most important features of local economy based on newly acquired sources.

In the early La Tène period, the compact settlements of the La Tène culture within the territory of contemporary Poland are limited to the area of Silesia¹. It is this period that the vast majority of sepulchral findings, which can usually be dated very precisely, come from. It was not until recently that the first larger batches of settlement findings which can be dated at the early La Tène period with certainty were obtained². One very interesting issue which requires further study is the aspect of changes which can be observed in the material culture of the Celtic communities residing in the above-mentioned area. At present, we are already in possession of materials which can be dated more precisely and enable us to identify differences between the early and middle La Tène period.

According to existing research, it is safe to say that the middle La Tène period, and in particular the early stages thereof, is a moment of peak growth of local Celtic settlement. It was a time of noticeable increase in the number of settlement sites. It could even be said that more than 70 % of the La Tène culture materials which have been discovered in Silesia and Lesser Poland thus far date back precisely to this relatively short period of time. This disproportion is very problematic, especially in the context of attempts to discuss the phenomenon of Celtic settlement in Poland as a whole. It is also the reason behind the wrong perception of the whole spectrum of the material culture of local Celtic tribes, which is unduly projected onto the earlier and later period. The above-mentioned predominance of materials dated at the middle La Tène period is also a result of the dynamic development of La Tène culture in all of its region, which starts at the beginning of the LT C1 phase.

Research area

In Upper Silesia, Celtic settlements are found mainly across the Głubczyce Plateau, which is a region with relatively varied topography, covered with fertile loessial brown soils and chernozems³. This area has been deforested to a great extent since the Neolithic and constituted a very heavily inhabited place at nearly all stages of prehistoric times⁴. La Tène settlements were centred in the valleys of small watercourses, in particular the edges thereof, mainly in the lower parts of gently rising slopes.

¹ Dulęba 2019, 382–384 Fig. 2.

² Dulęba/Kosicki 2017.

³ Maruszczak 1991.

⁴ Abłamowicz 2004.

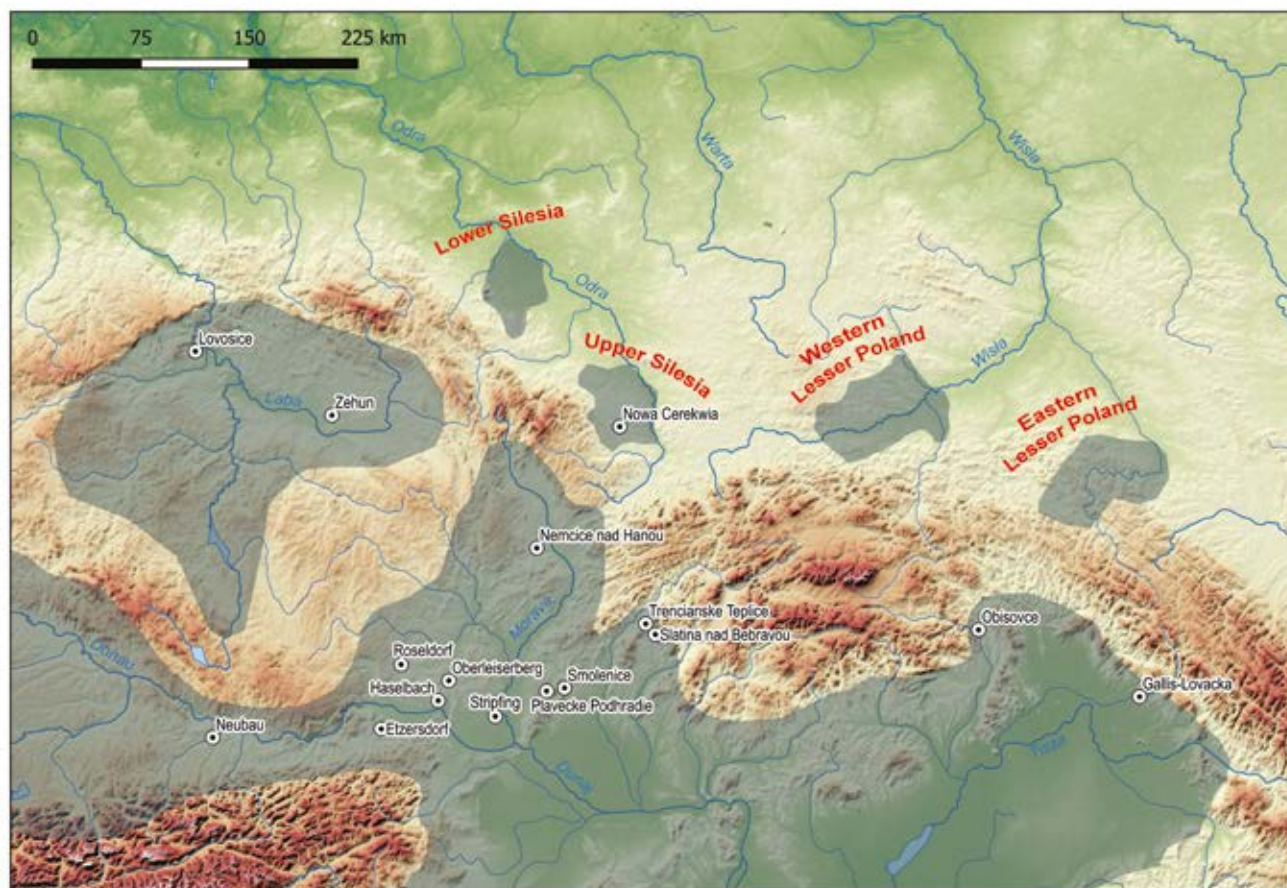


Fig. 1: The range of La Tène culture settlement in Central Europe dated at the 3rd and 2nd centuries BC with sites functioning as central settlements (prepared by P. Dulęba).

They also liked to settle on distinct peninsulas situated in the forks of watercourses. In this case, the morphological diversity of the landscape of a typical loessial highland facilitates effective recognition of places which were preferred for settlement.

In the central part of the region of the Głubczyce Plateau, which constitutes the northern foreground of the Moravian Gate (the most convenient pass between the Carpathians and the Sudetes), there was a local settlement centre discovered in the village of Nowa Cerekwia, Głubczyce District. The above-mentioned site is doubtless the most crucial when it comes to learning about the material culture of the La Tène period in Poland and one of the most important Celtic sites in Central Europe. The first discoveries in Nowa Cerekwia date back to the pre-war period. The rescue excavations carried out in the 1920s and the 1930s were not fully published and the majority of obtained materials were lost during the war⁵. Post-war research conducted dr Barbara Czerska from the University of Wrocław

over more than ten seasons from 1957 to 1973 led to the discovery of a vast settlement⁶ dated at the end of the early La Tène period and the middle La Tène period. Only contemporary amateur discoveries and supplementary surface surveys conducted in the years 2007–2010⁷ yielded a tremendous number of artefacts (metal ornaments and pieces of clothing, anthropomorphic and zoomorphic figurines, gold and silver coins, glassware, tools, etc.) confirming that the place used to be a central settlement that served the functions of a craftwork and trade agglomeration, similar to the central settlements recently discovered in places such as Nemčice nad Hanou in Moravia and Roseldorf in Lower Austria. The above-mentioned sites (Fig. 1) are large settlement centres where remains of well-organised and functionally varied buildings (such as remains of Celtic temples), traces of intense production activity and a vast number of artefacts, including a relatively large number of imports from the Mediterranean

⁵ Jahn 1931, 66–78; 148–149; Czerska 1959.

⁶ Czerska 1976.

⁷ Rudnicki 2014.

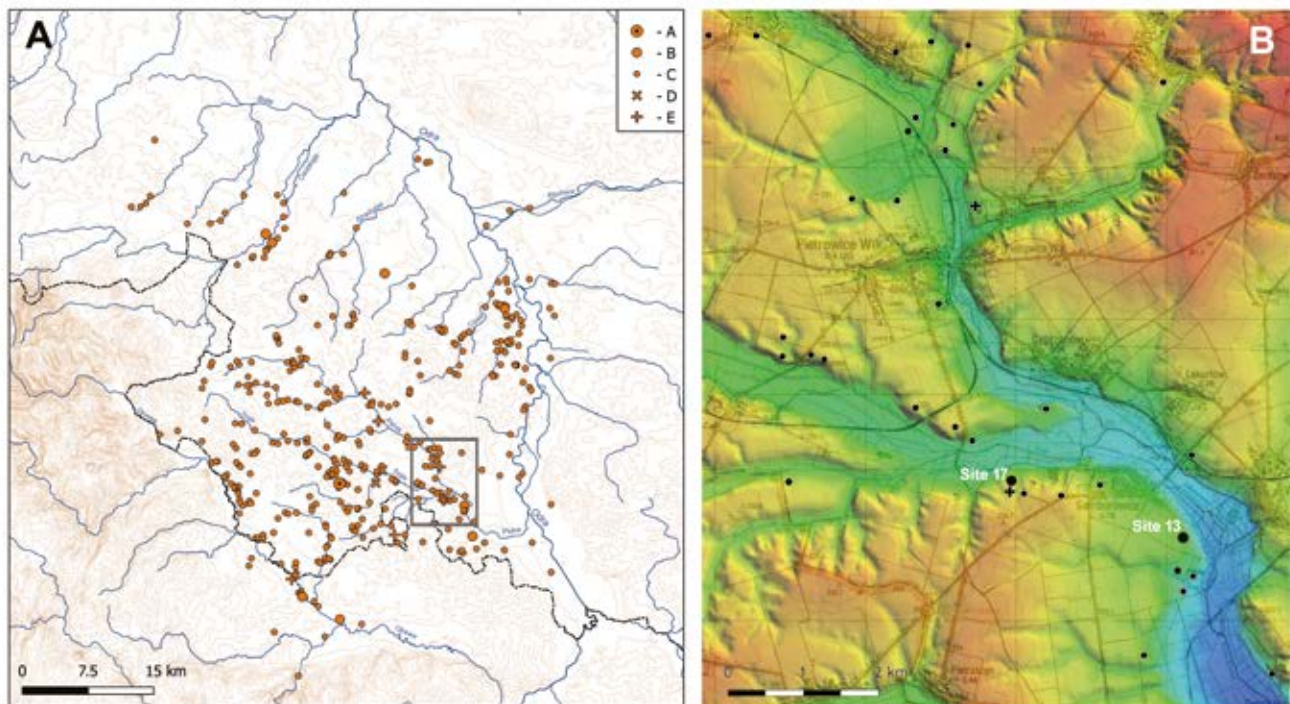


Fig. 2: A – La Tène culture settlement in the area of Upper Silesia. 1 – emporium. 2 – settlement (minimum 1 feature recognised by excavation). 3 – trace of settlement. 4 – burial ground. 5 – single grave. B – La Tène culture sites in the microregion of Samborowice (prepared by P. Dulęba, J. Soida).

region, were discovered⁸. The above-mentioned imports constitute tangible evidence of exceptionally intense contacts between local La Tène culture communities and the Hellenistic world.

Samborowice

When it comes to local settlements, the site in Nowa Cerekwia is an exceptional phenomenon. For this reason, in order to better identify its structure and economic potential, a decision was made to study small rural settlements, which can most commonly be found in the vast area of Central Europe. A microregion near the small village of Samborowice, Racibórz District (Fig. 2), 14 km south-east of Nowa Cerekwia, was selected for the purpose of detailed study of settlement and the economy of the La Tène culture in Silesia. Owing to archaeological prospection, which has been conducted regularly for nearly one hundred years now, the area is rather well explored from an archaeological point of view. Within the area, a network of settlements used by the La Tène culture people has been discovered. Preliminary surface surveying shows that the

vast majority of the above-mentioned sites are small open rural settlements typical of Central Europe, consisting of a single farmstead or two or three farmsteads functioning at the same time. Excavations were carried out at two sites within the area of Samborowice (Fig. 3).

The first one is Site 13, which was discovered south-east of the buildings of the contemporary village. This is also where most research work of the expedition was conducted in subsequent seasons. The surface surveys revealed a large amount of bulk material across an area of approx. 12 ha. Surface prospection was also accompanied by geophysical surveys performed by using the method of magnetic measurement, which covered an area of more than 8 ha. Site 13 is located on top of a long hummock aligned on the NW-SE axis, along the valley of the Psina river.

Site 17 is situated west of the buildings of the contemporary village. Based on planigraphy of the artefacts found on the surface, it was determined that the area of the site was approx. 4 ha and that it occupied nearly all of the peninsula slightly extending from the lagoon terrace of the Troja river. During the prospection, it was observed that the place was subject to rapid erosion. The top loessial layer appears to be relatively shallow; in many places there are masses of sand resulting from heavy ploughing. The site was also subjected to geophysical prospection covering more than 3 ha, but the results thereof, due to

⁸ Čižmář/Kolníková 2006; Holzer 2009.

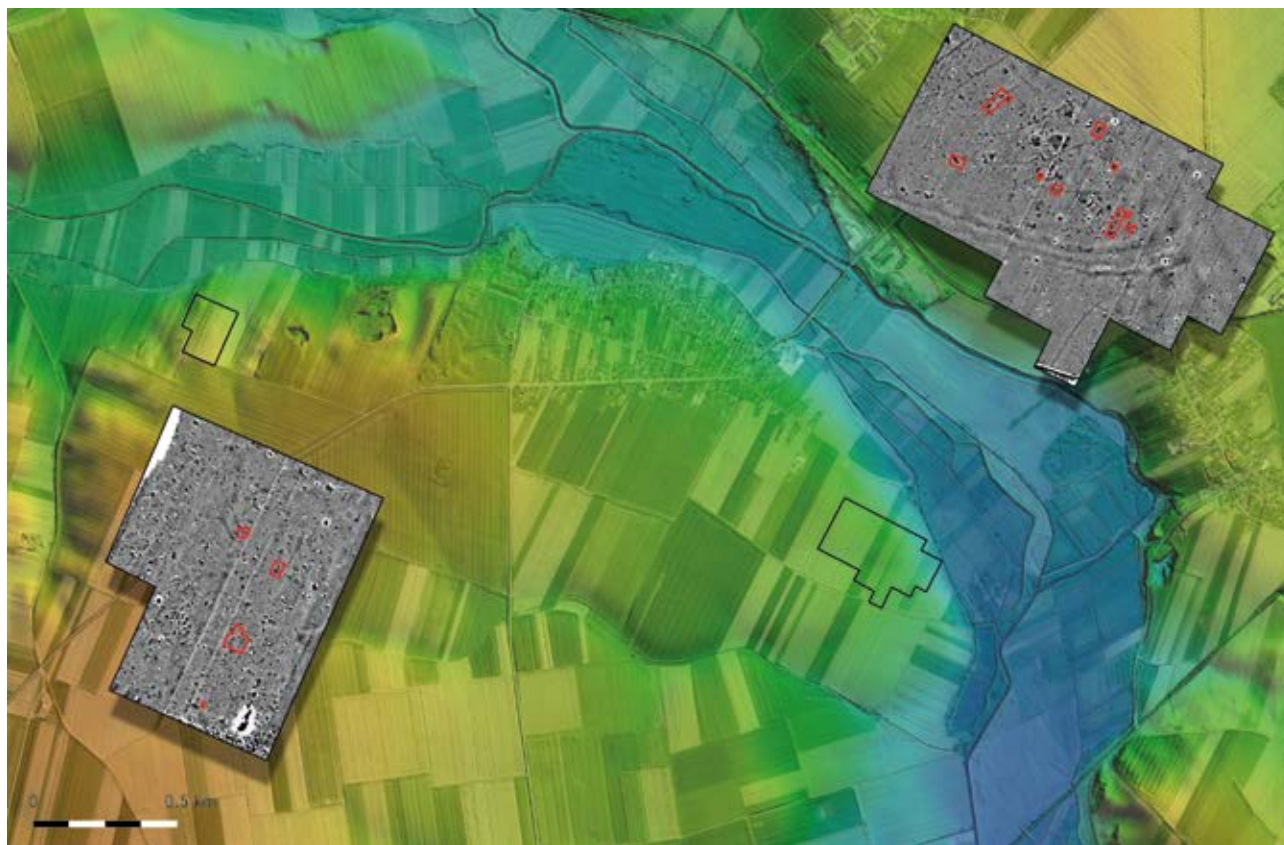


Fig. 3: Excavations where features of the La Tène culture were found marked on images produced in the course of the geophysical surveys carried out in Samborowice (prepared by J. Soida, P. Wroniecki).

the above-mentioned land erosion, are much harder to interpret.

The above-mentioned sites, as nearly all sites in Upper Silesia with recorded traces of the presence of Celts, constitute areas which have been used for settlement purposes almost uninterruptedly since the Neolithic era. For this reason, a decision was made to choose the places where La Tène culture settlement constituted the youngest well-documented settlement horizon. The method of excavation was used to verify those anomalies identified based on magnetic prospection which could potentially be associated with settlement features typical of the La Tène culture. It was those features that were selected for verification by excavation. The verification was further facilitated by the fact that on the above-mentioned sites La Tène culture settlement constituted the youngest well-documented settlement horizon. Because of that the risk of mistakes connected with the existence of similar features in settlements from the Roman period was lower. During the excavation work conducted in the years 2014–2019, 12 building remains (Site 13 comprises 8 features (Fig. 4) with a total area of approx. 138.5 m² and Site 17 comprises

four features (Fig. 5) with a total area of approx. 82 m²) were verified with positive results, and dated at the middle La Tène period (10 features and 1 post structure) and the early La Tène period (2 features and 1 post structure) based on the artefacts. Nearly all of the above-mentioned buildings sunken into the ground were remains of pit-houses (Fig. 6–7) typical of Iron Age settlement in the area of Central European *Barbaricum*. From the fills thereof, a wealth of archaeobotanical material was collected in addition to the abundance of artefacts such as ceramics, tools and pieces of clothing made from iron, bronze, glass, stone, sapropelite and amber.

The results of excavations show that the Celtic community which inhabited the microregion of the contemporary village of Samborowice in the Iron Age did not differ from its brethren from the area of Moravia and the middle basin of the Danube, but rather served the function of a vanguard of new advances in civilisation introduced into the area of the North European Plain. Owing to large batches of artefacts unearthed from features fills, we can identify two main phases in the functioning of local settlement dated at the early and middle La Tène period. A local

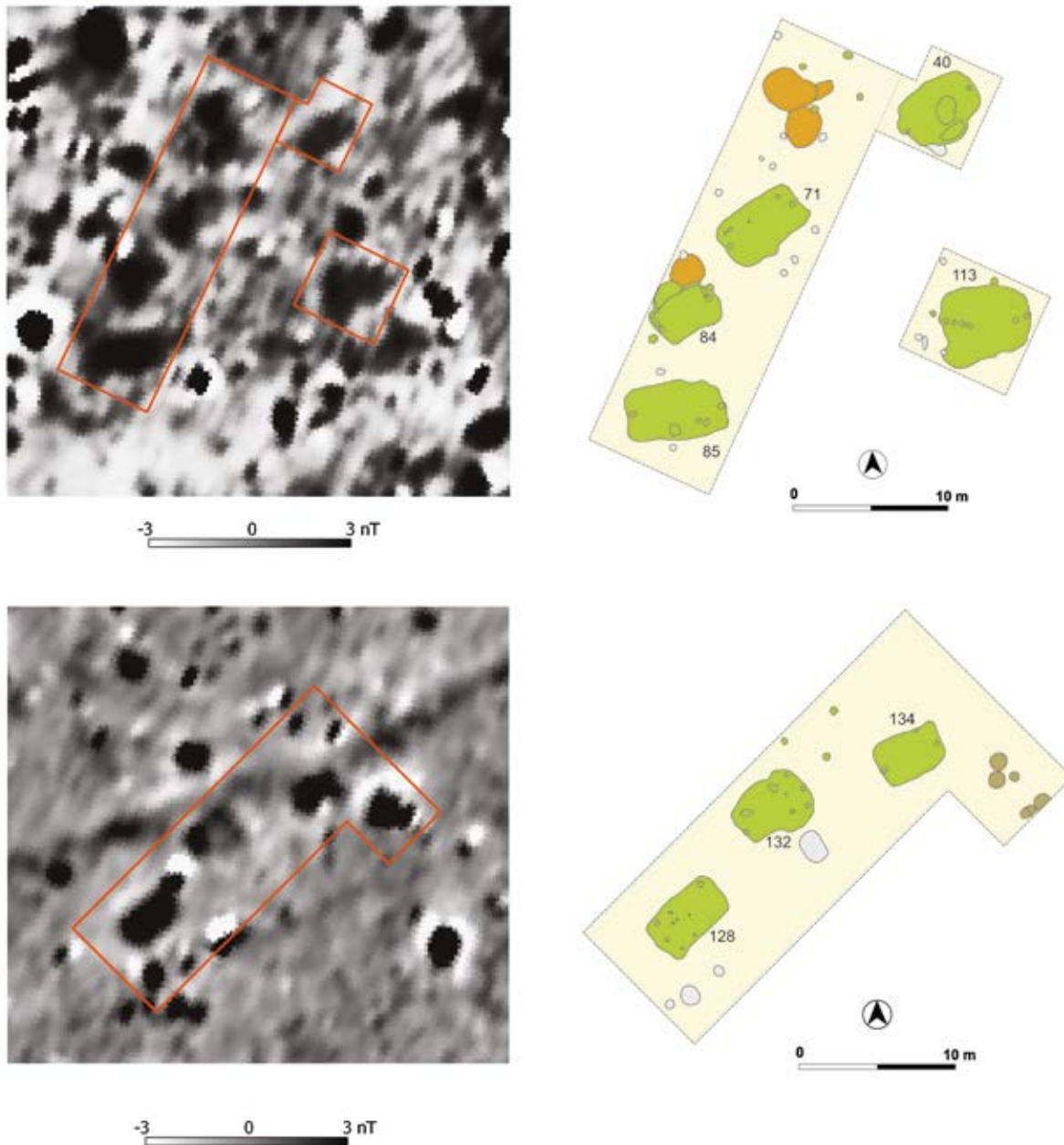


Fig. 4: Samborowice, Site 13. Relics of farmsteads (prepared by P. Dulęba, J. Soida, P. Wroniecki).

settlement has existed at least since the LT B1b phase, and the decline thereof only happened in the LT C2 phase or at the turn of the LT D1 stage. According to the chronological system developed by R. Gebhard⁹, this corresponds to the period from the first half of the 4th century to the second half of the 2nd century BC and is in line with earlier findings for the entire region of Upper Silesia¹⁰.

⁹ Gebhard 1989.

¹⁰ Woźniak 1992, 13–14.

As mentioned at the beginning, the existing research into the economy and landscape archaeology of the La Tène period in the area of contemporary Poland is insufficient. The aim of this paper is therefore to start filling in this gap. The study covers the botanical material collected during the excavations conducted in the years 2014–2017 on Site 13. Unfortunately, the zoological material collected on Site 13 is rather scarce, which is actually typical of rural La Tène culture settlements from the eastern zone of Celtic settlements. In connection with the above, a decision was made to expand the collection being analysed to include

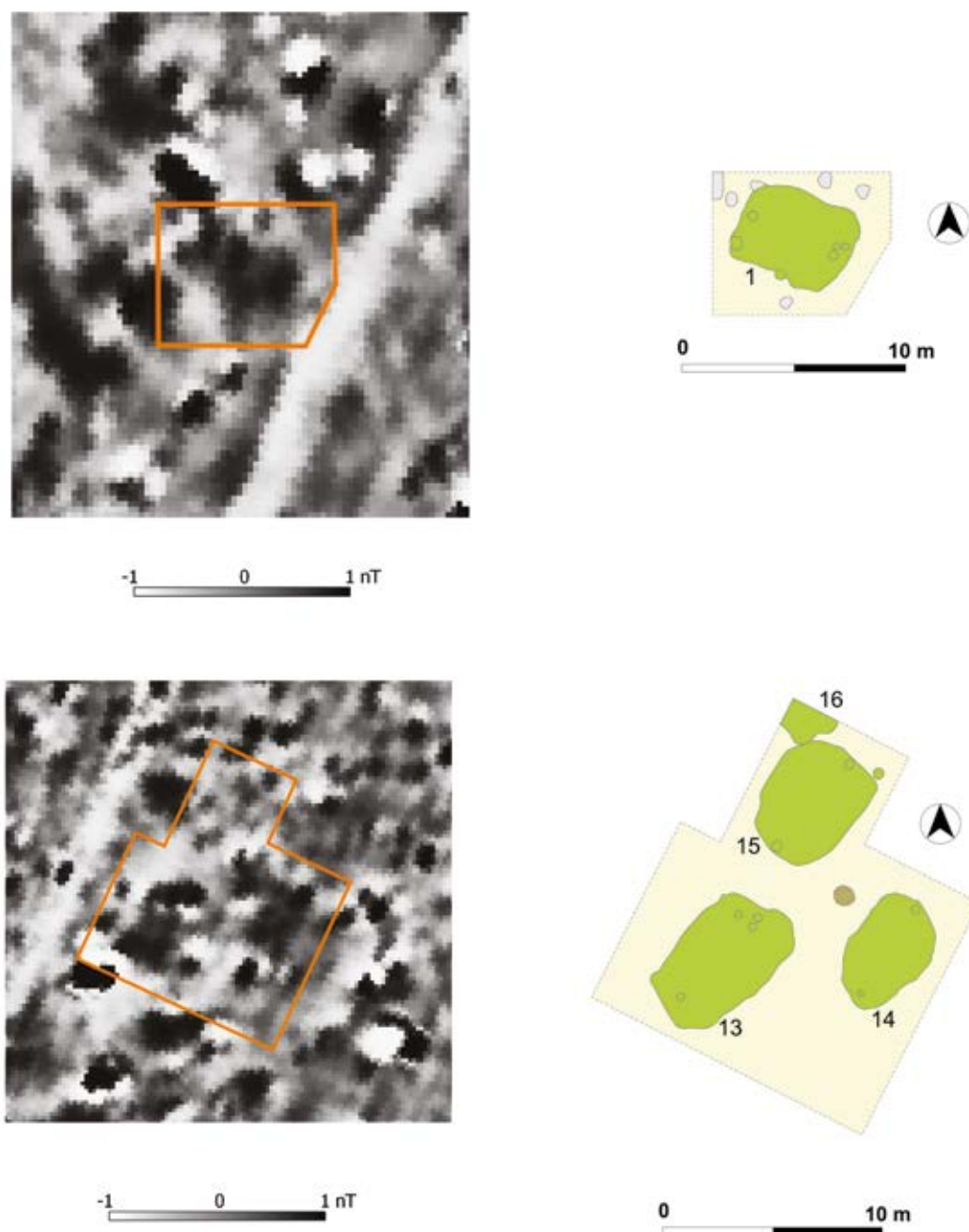


Fig. 5: Samborowice, Site 17. Relics of farmsteads (prepared by P. Dulęba, J. Soida, P. Wroniecki).

animal remains found on Site 17. Particular importance is placed on the last study season from 2019, which is when a relatively large batch of animal bones was collected. It should also be noted that preparation of botanical samples for the purposes of analysis is very time-consuming and inclusion thereof in the analysis would not change the general picture. A general and detailed discussion of the study results will be published in the site monographs which are currently being prepared.

Archaeobotanical materials

The archaeological research conducted on the site in Samborowice yielded a variety of materials for specialist botanical analysis. During the excavations, samples of sediment from fills of the discovered features were collected on a regular basis. The number of samples collected from each feature was different and ranged from one to several dozens depending on the type and size of a given



Fig. 6: Excavation 1/17 during survey of Site 13 in Samborowice. Visible remains of a farmstead from the early La Tène period and of a building from the middle La Tène period (photo by J. Soida).

feature. Overall, nearly 170 samples were collected over the course of four study seasons (2014–2017). These consisted primarily of soil samples, charcoal pieces and daub. The laboratory processing and office work involving the botanical materials were performed in accordance with the accepted archaeobotanical procedures. This paper contains a summary of previous studies of archaeobotanical materials from the years 2014–2017.

The materials found on the site in Samborowice comprised of remains of the following cereals: barley (*Hordeum vulgare*), common wheat (*Triticum aestivum*), emmer (*Triticum dicoccon*), spelt (*Triticum spelta*), common millet (*Panicum miliaceum*), oat (*Avena* sp.) and probably rye (cf. *Secale cereale*). The most frequently found species was emmer (*Triticum dicoccon*). The second largest (in terms of amount of found and identified remains) cereal was common millet (*Panicum miliaceum*), followed by spelt (*Triticum spelta*), barley (*Hordeum vulgare*) and common wheat (*Triticum aestivum*). On this site, oat (*Avena* sp.), which in this period can already be found on other sites, was present in the form of scant and small fragments

of awns. Based on these remains, it is impossible to tell whether this is the wild or cultivated form of oat. The above-mentioned rye was labelled on the basis of a single charred caryopsis. Overall, remains of hulled wheat in the form of spikelet elements were the most numerous. These remains survived both in sediments in the form of charred pieces as well as imprints of these pieces in daub. As regards to other cultivated plants, there were isolated finds consisting of flax seeds (*Linum usitatissimum*) and most likely pea seeds (cf. *Pisum sativum*).

The samples include remains (mainly diaspores) belonging to 26 species of wild plants. These were: common wind grass (*Apera spica-venti*), rye brome (*Bromus secalinus*), annual meadow-grass (*Poa annua*), timothy grass (*Phleum pratense*), barnyard grass (*Echinochloa crusgalli*), green/bristly foxtail (*Setaria viridis/verticillata*), crab grass (*Digitaria sanguinalis*), fat-hen (*Chenopodium album*), many-seeded goosefoot (*Chenopodium polyspermum*), oak-leaved goosefoot? (*Chenopodium* cf. *glaucum*), nipplewort (*Lapsana communis*), common corn cockle (*Agrostemma githago*), grass-leaf sandwort (*Arenaria ser-*

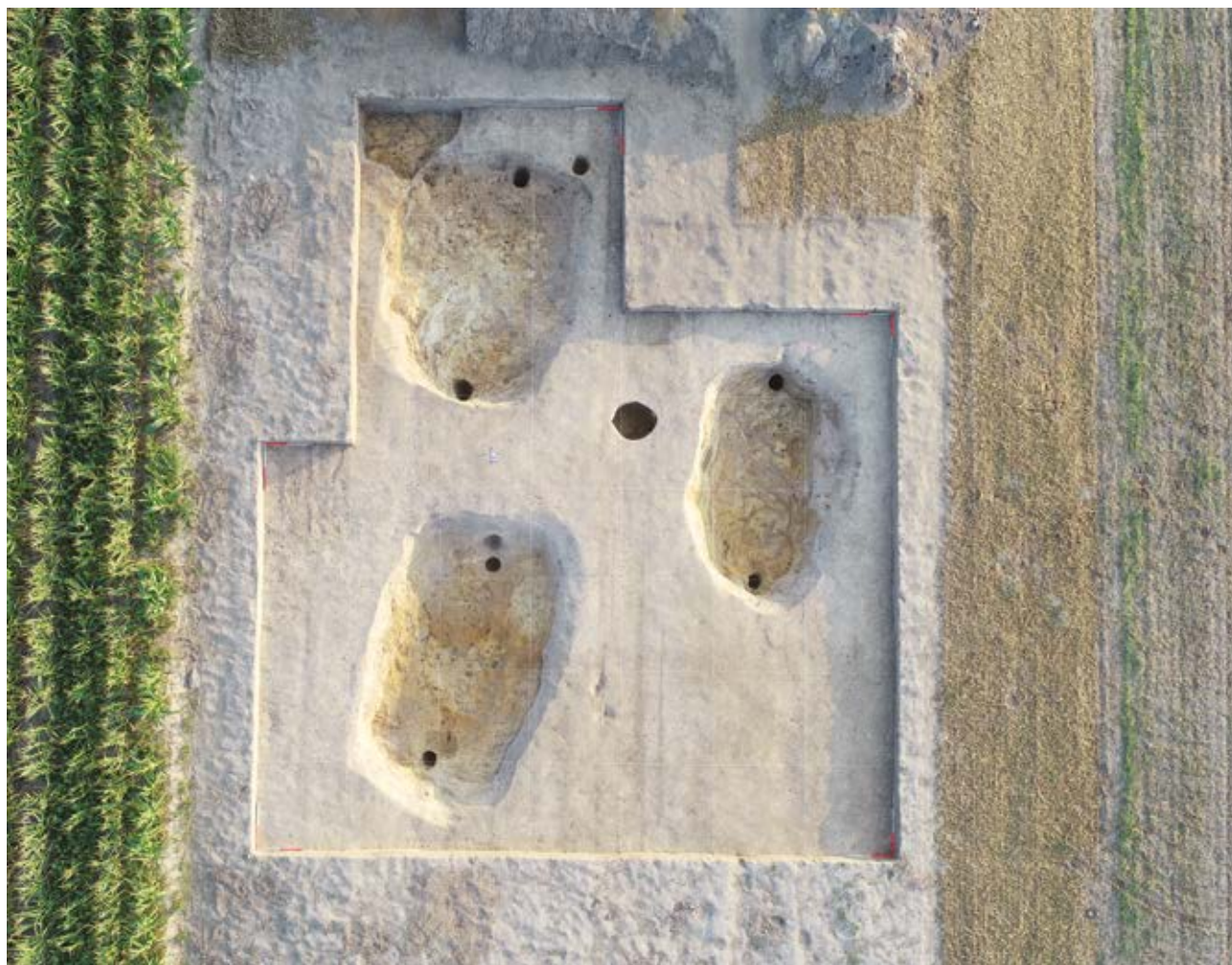


Fig. 7: Excavation 1/19 during survey of Site 17 in Samborowice. Visible remains of buildings dated at the middle La Tène period (photo by J. Soida).

pyllifolia), common chickweed (*Stellaria media*), black bindweed (*Fallopia convolvulus*), prostrate knotweed (*Polygonum aviculare*), pale persicaria (*Polygonum lapathifolium*), lady's thumb (*Polygonum persicaria*), sheep's sorrel (*Rumex acetosella*), curly dock (*Rumex crispus*), self-heal (*Prunella vulgaris*), corn mint (*Mentha arvensis*), ribwort plantain (*Plantago lanceolata*), false cleavers (*Galium spurium*), cleavers? (*Galium cf. aparine*), ivy-leaved speedwell (*Veronica hederifolia*). Nearly all of the above-mentioned species can be classified as common weeds or ruderal species. Apart from that, there were also remains of plants classified into 11 genera and 5 families (Fig. 8).

The materials analysed also included surviving remains of trees in the form of charcoal. Anthracological analysis revealed that nearly 99 % of the charcoal pieces analysed were remains of deciduous trees. Only a few fragments could be classified as conifers – most likely the Scots pine (cf. *Pinus sylvestris*) and the European silver fir

(cf. *Abies alba*). The dominant genus among the identified remains of deciduous trees was oak (*Quercus* sp.). Apart from that, the following were also identified (ordered according to the number of remains): the European beech (*Fagus sylvatica*), the European hornbeam (*Carpinus betulus*), birch (*Betula* sp.), alder (*Alnus* sp.), elm (*Ulmus* sp.) and most likely maple (cf. *Acer* sp.). The vast majority of charcoal pieces, i.e. more than half of the ones analysed, were classified only as deciduous trees with a diffuse porous wood or deciduous trees due to their size or state of preservation. Some of them could not be labelled. Apart from that, remains of shrubs were found in the form of surviving charred seeds. Elder (*Sambucus* sp.) diaspores were found in the layers of features explored in the 2015 season. On the basis thereof, it was possible to identify the dwarf elder (*Sambucus ebulus*).



Fig. 8: Selected seeds and fruits from La Tène culture features in Samborowice (photo by A. Sady-Bugajska). A – barley (*Hordeum vulgare*). B – brome (*Bromus* sp.). C – einkorn (*Triticum monococcum*). D – dwarf elder (*Sambucus ebulus*). E – false cleavers (*Galium spurium*). F – black bindweed (*Fallopia convolvulus*). G – sedge (*Carex* sp.). H – common millet (*Panicum miliaceum*). I – barnyard grass (*Echinochloa crus-galli*). J – knotweed (*Polygonum* sp.). K – fat-hen (*Chenopodium album*). L – timothy grass (cf. *Phleum pratense*).

On crop structures

Interpretation of the results of archaeobotanical studies obtained thus far is quite difficult. All we have is a collection of plant remains obtained from various features, from various parts of the site. The presence of plant remains may therefore be – with a high degree of probability – the result of chance. Furthermore, the amount of remains produced when sluicing the sediments, compared with the volume of each sample, was negligible (from several to several dozens remains on average per 1.5 kg of sediment). A larger cereal deposit which would enable more detailed description of the characteristics of annual crops has yet to be found. There are no similar complexes in south-western Poland which could be used for comparison.

The La Tène period has not been extensively researched from a botanical point of view. Based on the results of botanical studies for other regions in Poland,

mainly Lesser Poland, it can be said that it was a moment in the history of agriculture when important changes happened with regard to crop structure. By the end of this period, barley still played an important role, but when it came to other cereals, there was a change in the species of wheat being grown, with the role of rye and oat becoming more prominent and the role of millet starting to decline. On Lesser Poland sites from this chronological period, the most frequently found remains were those of rye. The second most commonly found species was barley, followed by common wheat and emmer wheat. One important find was the common oat, whose remains were discovered on two out of eight sites subjected to archaeobotanical analysis¹¹.

¹¹ Lityńska-Zajac 1997.

With regard to the statement above, we can already see differences in the crop structure between regions of southern Poland. In Samborowice, the most prevalent species were hulled wheats: mainly emmer and spelt, as well as common millet. Remains of barley and common wheat were found fairly often, while oat (as a genus) and rye were found in small or trace amounts. Attempts to compare the results for Samborowice with findings from the La Tène period from other European sites (Czech Republic, Germany, Austria) yield other insights. According to the botanical analyses carried out on the Dürrenberg site in Austria, common millet (*Panicum miliaceum*), emmer (*Triticum dicoccon*), barley (*Hordeum vulgare*) were the most important cereals¹². Apart from the three, there were also spelt (*Triticum spelta*), hulled barley (*Hordeum vulgare* var. *nudum*) and pea (*Pisum sativum*). Barley (*Hordeum vulgare*), spelt (*Triticum spelta*), einkorn (*Triticum monococcum*) and emmer (*Triticum dicoccon*), common millet (*Panicum miliaceum*) and hulled wheats (*Triticum aestivum*/*Triticum turgidum* s.l.) were the main cereals discovered on sites from the early La Tène period in the valley of the Neckar river in Baden-Württemberg¹³. Oat (*Avena* sp.) was found in two out of the four sites discussed in the above-mentioned paper, while rye in the form of an isolated find was found on one site only. Barley, einkorn, spelt and common millet were the main cereals found in a granary in the central settlement on the Roseldorf site in Lower Austria¹⁴. Apart from the four, there were also hulled wheats, rye and most likely cultivated oat. Barley and common millet are also the predominant species on the Oberleiserberg, Michelstetten and Mitterretzbach sites in Lower Austria, accompanied by einkorn, emmer, spelt, hulled wheats and foxtail millet. The latter cereals and the remains of what is likely rye and wild or cultivated oat were also present in the complexes being analysed, but in negligible amounts¹⁵. The La Tène period, saw the start of cultivation of hulled wheats on sites within the territory of the current Czech Republic, with barley – considered the main cereal of the period – as well as emmer and spelt still being grown. On the other hand, cultivation of einkorn and common millet was on the decline while rye and oat started being grown¹⁶.

Trees

The data obtained on the basis of charcoal pieces on the trees potentially growing in the nearest neighbourhood of the site in Samborowice confirm that in the time of function of La Tène settlement, i.e. the early sub-Atlantic period, there were forest communities which included the common beech, common hornbeam, oak, birch, elm, maple and alder. The trees might have also included some of the identified coniferous species, i.e. pine and fir. Analysis of the map of potential vegetation for the village and the vicinity thereof (Fig. 9), according to which the predominant stands in the area in question are subcontinental lime-oak-hornbeam forests (Tilio-Carpinetum); Lesser-Poland-vacariant with beech and fir, eutropic (“rich”) communities¹⁷. At a short distance from the site in the valley of the Psina river, there might have been lowland alder and ash-alder forests on the periodically swamped ground-water soils (Carici-Alnetum)¹⁸. The predominance of oak remains in the analysed materials may be a result of preference for this type of wood, which has frequently been observed on other sites.

Archaeozoological materials

Among the bones, there were remains of vertebrates represented by birds and mammals. Taking into account the fragmentation thereof and the discovered signs of cutting, the faunistic material should be considered a set of post-consumption remains. The poor state of preservation is mainly the result of taphonomic factors from the biost-ratinomic stage, such as cutting of animal carcass, preparation of meat for consumption, or consumption thereof. This stage also includes the time when remains remain on the surface after being discarded. In this case, numerous bone fragments bear signs of being bitten by predators and traces of varied exposure to the damaging effects of the weather in the form of damaged outer surfaces of the bones. This suggests that the time between discarding and ultimate deposition thereof varied. On the other hand, no significant changes or cavities were found in the structure of bones and teeth that would be the result of the destructive impact of taphonomic factors at the diagenetic stage as a result of soil erosion (e.g. “perforation” of the tooth surface or post-cranial parts).

¹² Swidrak 1999.

¹³ Sitka 1999.

¹⁴ Holzer 2008; Heiss/Kohler-Schneider 2014; Kohler-Schneider/Caneppele/Heiss 2015.

¹⁵ Heiss/Kohler-Schneider 2014.

¹⁶ Kočár/Dreslerová 2010, 226 Graph 7.

¹⁷ Matuszkiewicz *et al.* 1995.

¹⁸ *Ibidem*.

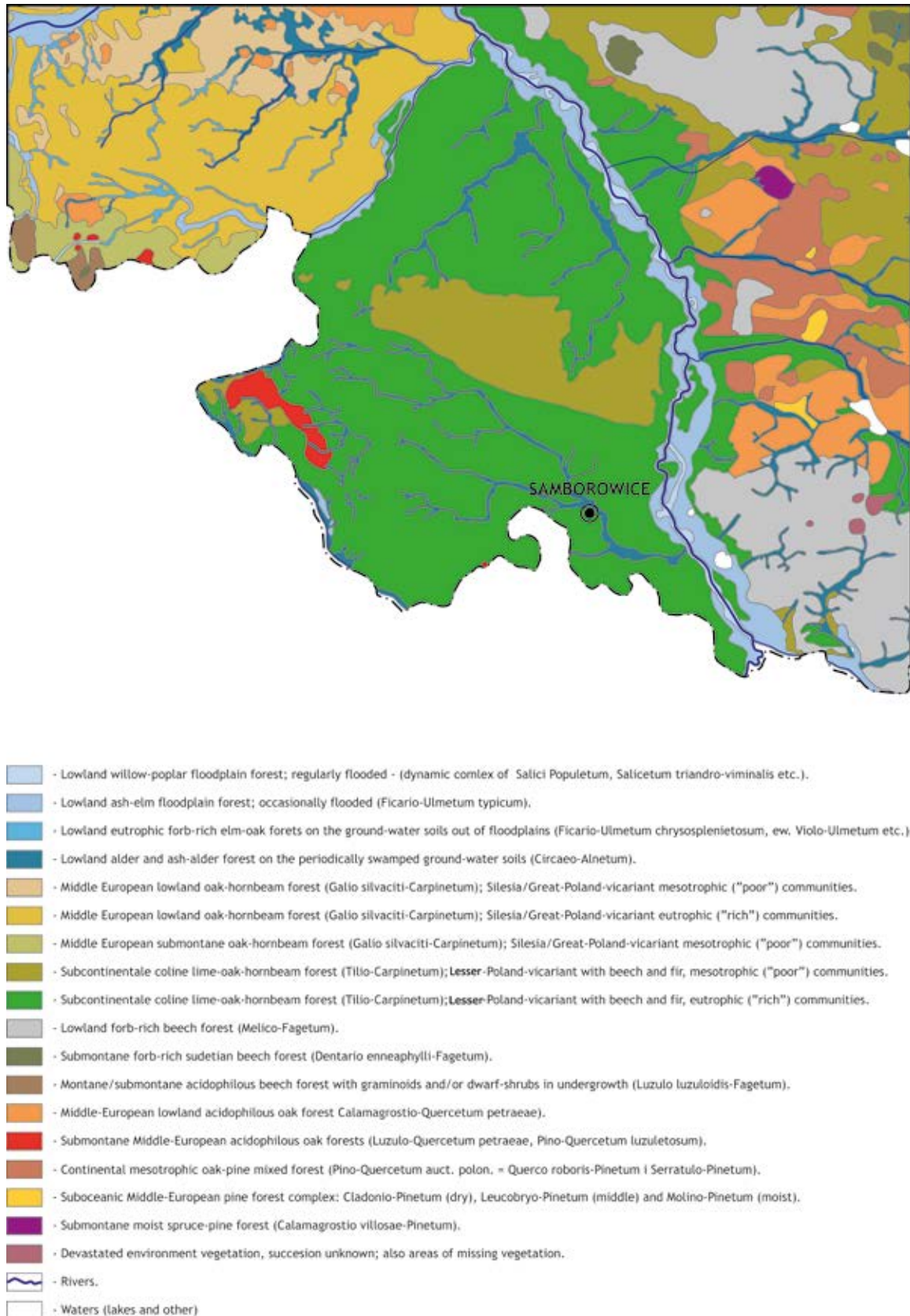


Fig. 9: Map of potential vegetation natural for the Głubczyce Plateau and the vicinity of the site in Samborowice (based on: Matuszkiewicz *et al.* 1995; Matuszkiewicz 2008; prepared by J. Soida).

Tab. 1: Samborowice, Site 13. Breakdown of animal bone remains by feature.

Feature	Cattle	Pig	Sheep/ goat	Sheep	Horse	Dog	Deer	Beaver	Labelled	Unlabelled	Total
40	50	8	20	2	3	–	1	–	84	22	106
71	45	3	4	–	–	–	2	–	54	14	68
84	40	2	–	–	6	1	–	3	52	33	85
85	22	14	–	–	–	–	–	–	36	23	59
113	28	2	11	–	–	–	–	–	41	2	43
128	3	1	–	–	–	–	–	–	4	7	11
132	3	–	–	–	–	–	–	–	3	10	13
134	8	–	–	–	–	–	–	–	8	2	10
Total	199	30	35	2	9	1	3	3	282	113	395

Apart from post-consumption remains, 4 bones bearing signs of craftwork processing (Features 14 and 15) were also found on Site 17. These artefacts were not included in the collection of animal remains of post-consumption nature due to their function and intended use being different.

Archaeozoological materials – methodology

The animal remains were subjected to detailed archaeozoological analyses. These included labelling with the name of species and anatomical structure¹⁹, calculation of the number of bones (GLS), bone measurement²⁰ and determination of the age²¹, sex²² and size of the animals²³. When calculating the number of remains (GLS), fragments which make up a single bone were treated as a single specimen. An analysis taking into account the technological division of the carcass into parts was performed for cattle, pig and sheep/goat (in the case of other species the number of remains was too low). The data were compared with the percentages observed in model skeletons for a given species²⁴.

The morphological image of cattle and pig was also analysed with the use of point-based scales²⁵. It was decided that small sizes fell within the range from 0 to

30 points, medium sizes – from 31 to 70 points, and large sizes – from 71 to 100 points.

In the case of sheep and goat remains, due to difficulty with unambiguous identification thereof, which stemmed mainly from the morphological similarity of parts of their skeletons and significant fragmentation of the bone remains being analysed, a joint “sheep/goat” group, which is conventionally accepted in archaeozoological research, was employed for purposes of the analysis²⁶. Separation of the species was only possible in a limited number of cases²⁷.

Results and discussion

On Site 13, 395 animal bone remains belonging to mammals only were unearthed, of which 282 osteological units were labelled, which constitutes 71.4 % of the entire collection. The animal bone material came from eight archaeological features (Tab. 1). On Site 17, 1,650 animal bone pieces were collected – both from birds (1.6 %) and mammals (98.4 %). Out of 15 bird bones, 9 were labelled with regard to the species and anatomical structure (by dr hab. Teresa Tomek from the Institute of Systematics and Evolution of Animals, Polish Academy of Sciences in Kraków), and in the case of mammals 702 fragments were labelled, i. e. 77.8 %. The animal bone material came from 4 archaeological features (Tab. 2).

In the case of both sites, the labelled remains come mainly from domestic mammals: Site 13 – 97.9 %; Site 17 – 97.4 %, with the share of wild mammal remains being much lower: Site 13 – 2.1 %; Site 17 – 2.6 %. An analysis of the figures pertaining to the collection of bones of iden-

¹⁹ Schmid 1972; Krysiak *et al.* 2007; Popesko 2008.

²⁰ von den Driesch 1976.

²¹ Lutnicki 1972; Schmid 1972; Müller 1973; Benecke 1988.

²² Calkin 1960; Schmid 1972; Habermehl 1975.

²³ Calkin 1960; 1970; Teichert 1969; 1975.

²⁴ Lasota-Moskalewska 2008.

²⁵ Lasota-Moskalewska 1984; Lasota-Moskalewska/Kobryń/Świeżyński 1987.

²⁶ Lasota-Moskalewska 2008.

²⁷ Schramm 1967.

Tab. 2: Samborowice, Site 17. Breakdown of animal bone remains by feature (Abbreviations: Unlab. – unlabelled; Lab. – labelled).

Feature	Cattle	Pig	Sheep/ goat	Sheep	Goat	Horse	Dog	Deer	Roe deer	Rodent	Lab.	Unlab.	Total	Bird
1	72	22	22	–	–	–	2	–	–	–	118	48	166	1
13	47	19	34	–	–	–	1	3	–	2	106	23	129	–
14	37	20	26	1	–	3	3	2	1	–	93	47	140	3
15	111	121	126	4	1	1	11	9	1	–	385	82	467	11
Total	267	182	208	5	1	4	17	14	2	2	702	200	902	15

Tab. 3: Samborowice, Site 13. Breakdown of mammal bones by species and anatomical structure.

Bone	Cattle	Pig	Sheep/ goat	Sheep	Dog	Horse	Deer	Beaver	Total
Antlers	–	–	–	–	–	–	2	–	2
Horncore	4	–	–	–	–	–	–	–	4
Cranial bones	5	2	1	–	–	–	–	–	8
Mandible	7	2	3	–	–	–	–	–	12
Teeth	85	21	15	–	–	5	–	3	129
Cervical vertebrae	1	–	–	–	–	1	–	–	2
Thoracic vertebrae	2	–	1	–	1	–	–	–	4
Ribs	17	–	2	–	–	–	–	–	19
Scapula	2	1	–	–	–	–	–	–	3
Humerus	18	–	–	–	–	–	–	–	18
Radius	9	–	6	–	–	1	–	–	16
Radius and ulna	2	–	–	–	–	–	–	–	2
Ulna	2	–	1	–	–	–	–	–	3
Carpal bones	3	–	–	–	–	–	–	–	3
Metacarpal bone	6	–	–	1	–	–	1	–	8
Metacarpal/metatarsal bone	–	1	–	–	–	–	–	–	1
Pelvic bone	1	–	–	–	–	–	–	–	1
Femur	7	–	1	–	–	–	–	–	8
Tibia	9	–	4	–	–	1	–	–	14
Fibula	–	2	–	–	–	–	–	–	2
Talus	3	–	1	1	–	1	–	–	6
Calcaneus	2	–	–	–	–	–	–	–	2
Tarsal bones	1	–	–	–	–	–	–	–	1
Metatarsal bones	10	–	–	–	–	–	–	–	10
Phalanges	3	1	–	–	–	–	–	–	4
Total	199	30	35	2	1	9	3	3	282

tified animals points to the highest share of cattle (*Bos primigenius* f. *taurus*), in the case of both sites; Site 13 – 70.6%; Site 17 – 38.0 %, followed by sheep and goats (*Ovis ammon* f. *aries*/*Capra aegagrus* f. *hircus*): Site 13 – 13.1%; Site 17 – 30.5 %, as well as pigs (*Sus scrofa* f. *domestica*): Site 13 – 10.6 %; Site 17 – 25.9%. The shares of bones of the horse (*Equus ferus* f. *caballus*) and the dog (*Canis lupus* f. *familiaris*) are negligible: Site 13 – 3.2 % and 0.3 %, respectively; Site 17 – 0.6 % and 2.4 %, respectively. The same distribution of the three basic species was found in the case of Features 40, 71 and 113 on Site 13 and Features 1, 13 and 14 on Site 17. Only in the case of Feature 15 (Site 17) did

the situation look slightly different. In this case, sheep/goat bones were the most prevalent, followed by pig bones and then cattle bones. In the case of Site 13, wild mammals are represented by the deer and European beaver (1.1 %, respectively), and in the case of Site 17 by the deer and roe deer (2.0 % and 0.3 %, respectively). In this settlement, there were also 2 bones of a rodent the size of a striped field mouse (0.3 %), which should be treated as an accidental admixture (Tab. 3–4, Fig. 10).

The obtained data suggests that the main sources of animal protein and fat for settlement residents were three species of domestic mammals: cattle, small ruminants

Tab. 4: Samborowice, Site 17. Breakdown of mammal bones by species and anatomical structure.

Bone	Cattle	Pig	Sheep/ goat	Sheep	Goat	Dog	Horse	Deer	Roe deer	Rodent	Total
Antlers	–	–	–	–	–	–	–	5	–	–	5
Horncore	5	–	–	–	1	–	–	–	–	–	6
Cranial bones	19	27	7	–	–	3	–	1	–	–	57
Mandible	13	19	19	–	–	4	1	–	–	2	56
Teeth	40	39	45	–	–	4	3	2	–	–	133
Cervical vertebrae	6	1	1	–	–	–	–	–	–	–	8
Thoracic vertebrae	10	4	7	–	–	–	–	–	–	–	21
Lumbar vertebrae	–	2	1	–	–	–	–	–	–	–	3
Sacrum	1	–	–	–	–	–	–	–	–	–	1
Coccygeal vertebrae	1	–	–	–	–	–	–	–	–	–	1
Ribs	54	22	28	–	–	–	–	–	–	–	104
Scapula	6	10	9	1	–	–	–	–	–	–	26
Humerus	23	7	13	–	–	–	–	–	–	–	43
Radius	11	6	14	–	–	1	–	–	–	–	32
Radius and ulna	–	–	1	–	–	–	–	–	–	–	1
Ulna	2	5	3	–	–	–	–	–	–	–	10
Carpal bones	4	1	–	–	–	–	–	–	–	–	5
Metacarpal bone	6	4	5	1	–	–	–	1	–	–	17
Metacarpal/ metatarsal bone	1	1	–	–	–	–	–	–	–	–	2
Pelvic bone	8	4	4	–	–	1	–	–	–	–	17
Femur	7	9	10	–	–	1	–	–	–	–	27
Patella	1	–	–	–	–	–	–	–	–	–	1
Tibia	12	11	21	1	–	2	–	1	–	–	48
Fibula	–	–	–	–	–	–	–	–	–	–	–
Talus	2	1	1	1	–	–	–	–	–	–	5
Calcaneus	3	1	–	–	–	–	–	–	–	–	4
Tarsal bones	2	–	–	–	–	–	–	–	–	–	2
Metatarsal bones	16	3	13	1	–	–	–	4	2	–	39
Phalanges	14	5	6	–	–	1	–	–	–	–	26
Total	267	182	208	5	1	17	4	14	2	2	702

and pigs. On the other hand, it is hard to make conclusive remarks on the consumption of horse and dog meat. The lack of clear traces of bones similar to the ones present on post-consumption leftovers indicates that, with the exception of an isolated case, these animals did not constitute a significant part of the diet. However, there is no doubt that the meat of wild mammals was consumed, mainly that of deer and roe deer, although to a lesser extent. The diet might have also been supplemented with fowl (chicken) and wild birds (mallard, goose, black grouse, buzzard or crane) – as identified on Site 17 (Tab. 5). In the case of ducks and geese, we must take into account the possibility that these were also domesticated forms, as in most cases it is impossible to differentiate wild geese and ducks from their domestic counterparts.

Observations concerning the anatomical composition taking into account the technological division of the carcasses of cattle (Site 13), cattle, sheep/goats and pigs

Tab. 5: Samborowice, Site 17. Breakdown of bird bones by species and anatomical structure.

Feature 14		Feature 15	
Bird	Bone	Bird	Bone
<i>Lyrurus (Tetrao) tetrix</i> black grouse	femur	<i>Lyrurus (Tetrao) tetrix</i> black grouse	femur
<i>Buteo buteo</i> buzzard	ulna	<i>Anas platyrhynchos</i> mallard	radius
<i>Anser sp.</i> goose	crus	<i>Anser sp.</i> goose	radius
		<i>Gallus gallus</i> chicken	radius
		<i>Grus grus</i> crane	ulna
		<i>cf. Gallus Gallus</i> chicken	ribs

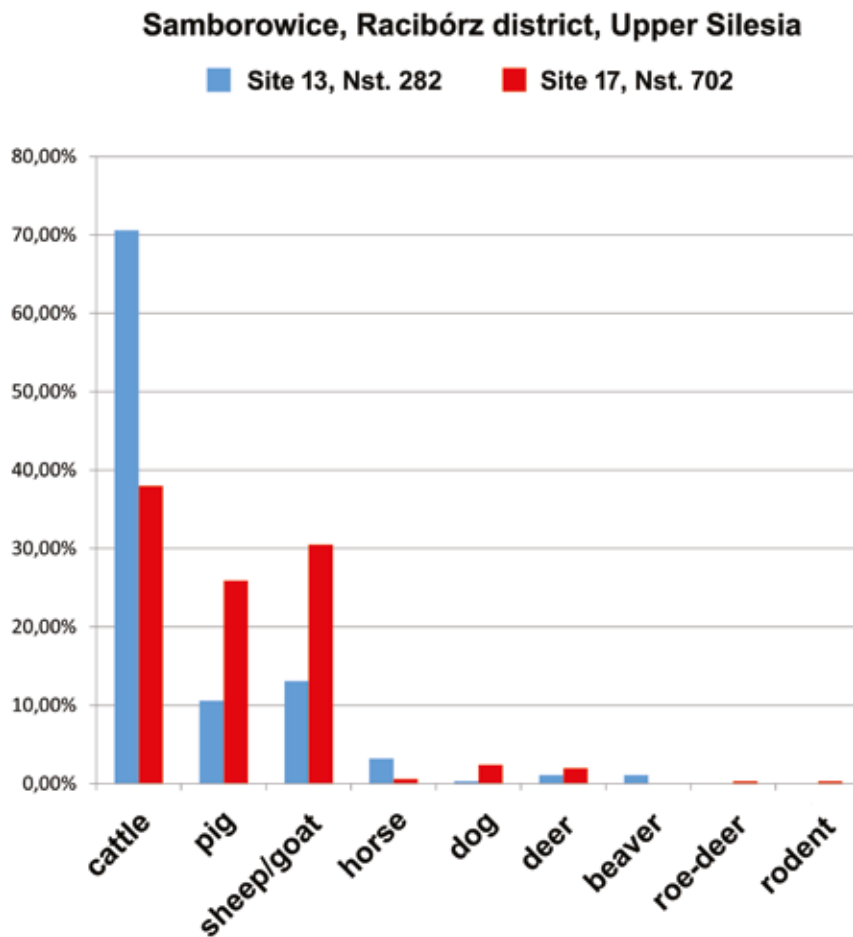


Fig. 10: Breakdown of labelled mammal bones from features on Sites 13 and 17 in Samborowice by species (compiled by R. Abłamowicz).

(Site 17), compared with the proportions of a model skeleton for these species, show that all parts of the skeleton of these animals were present in the material – including the phalanges (Tab. 6–9). In all cases, excess of skeletal elements of the closer limb parts (shoulder, haunch, ham, shank, knuckle), i.e. parts which are attractive and valued in culinary arts could be observed; however, it must be noted that shoulder was preferred to ham or haunch, perhaps due to it being a leaner cut of meat. Consumption of cuts which are so attractive in culinary terms may suggest that the stocks were large compared with the number of settlement residents, which ensured an abundance of meat and allowed for more sublime culinary preferences. This might also be the result of greater fragmentation of these parts in connection with food preparation. In the case of pigs, surpluses are also observed when it comes to consumption of carcass parts connected with bones of the head (edible parts of the head). This may be a result of conscientious use thereof for consumption purposes (source of very tender meat, often considered a delicacy).

This is due to the fact that virtually the entire pig carcass can be used in culinary arts²⁸. Surpluses of bones of the head were observed in the case of cattle on Site 13. In this case, it cannot be ruled out that this state of affairs was influenced by taphonomic factors. In the case of cattle, sheep/goats and pigs, a shortfall of phalanges could be observed, which may indicate that the place of slaughter and skinning of the carcass was not the same as the place of subsequent deposition of leftovers.

Due to the amount of data concerning the age of domestic animals being too small, it is impossible to draw firm conclusions. The data suggest that in the case of cattle, it was adult animals of *adultus* age and optimum size that were selected for slaughter. In the case of pigs, it was also the adult *adultus* animals that were destined for slaughter, with a lower share of younger animals from the *juvenis* or *subadultus* age ranges. Pigs which are

²⁸ Sobociński 1977.

Tab. 6: Samborowice, Site 13. Anatomical composition of cattle remains by technological breakdown, compared with the proportions of a model skeleton

Carcass parts	n	%	Model skeleton (%)
Head	101	50.8	20
Torso	20	10.1	43
Closer part, pectoral limb	33	16.6	5
Further part, pectoral limb	9	4.5	8
Closer part, pelvic limb	17	8.5	3
Further part, pelvic limb	16	8.0	7
Phalanges	3	1.5	14

Tab. 7: Samborowice, Site 17. Anatomical composition of cattle remains by technological breakdown, compared with the proportions of a model skeleton.

Carcass parts	n	%	Model skeleton (%)
Head	77	28.8	20
Torso	72	27.0	43
Closer part, pectoral limb	42	15.7	5
Further part, pectoral limb	11	4.1	8
Closer part, pelvic limb	28	10.5	3
Further part, pelvic limb	23	8.6	7
Phalanges	14	5.3	14

one year old have already reached 95 % of its adult body weight, which means that slaughtering them before they reach morphological maturity is also viable. In the case of small ruminants, the percentages of young (*juvenis*, *subadultus*) and adult (*adultus*) animals were balanced. This means that young animals, whose meat is considered much finer than that of older animals, were also selected for slaughter²⁹. The predominance of adult animals in both settlements shows that the above-mentioned species were bred not only for their meat, but also to obtain other animal products, such as milk (and dairy products), wool and manure or use animals (mainly cattle) for labour. In a single case, the age of a dog was determined to be about eight years and the age of a horse was determined to be about 20 years based on the teeth (Site 17, Feature 14).

A limited number of remains bore features which made it possible to determine the sex of the animal. On Site 13, three bones of female bovines were found (Features 40, 84). On Site 17, in the case of two heads of cattle, bone dimensions suggest that it could be either a female or a steer (Features 13, 14). In four cases, it was possible

Tab. 8: Samborowice, Site 17. Anatomical composition of pig remains by technological breakdown, compared with the proportions of a model skeleton.

Carcass parts	n	%	Model skeleton (%)
Head	85	46.7	20
Torso	29	16.0	34
Closer part, pectoral limb	28	15.4	4
Further part, pectoral limb	6	3.3	10
Closer part, pelvic limb	24	13.2	3
Further part, pelvic limb	5	2.7	9
Phalanges	5	2.7	20

Tab. 9: Samborowice, Site 17. Anatomical composition of sheep and goat remains by technological breakdown, compared with the proportions of a model skeleton.

Carcass parts	n	%	Model skeleton (%)
Head	72	33.6	20
Torso	37	17.3	43
Closer part, pectoral limb	41	19.2	5
Further part, pectoral limb	6	2.8	8
Closer part, pelvic limb	36	16.8	3
Further part, pelvic limb	16	7.5	7
Phalanges	6	2.8	14

to determine the sex of a pig – found to be male (Site 17, Feature 15).

The values for height at the withers for cattle on Site 13 fall within the range from 97.0 to 115.3 cm, while on Site 17 the measurement concerned bones which might have belonged to a female or steer, with the parameters amounting to 102.3/104.8 up to 105.7/108.7 cm, respectively. Taking into account the dimensions of bones and the calculated height at the withers, it must be concluded that small and mid-sized brachycerous animals accounted for the vast majority of the herd on both sites³⁰. The calculated height at the withers for pigs based on a single talus from Feature 1 on Site 17 amounts to 65.3 cm. Taking into account the dimensions of bones and the calculated height at the withers, it must be concluded that mid-sized and large animals accounted for the vast majority of the herd. In an isolated case, the measurement of the greatest length (GL) of the calcaneus amounting to 66 mm (Site 17, Feature 14) shows that there were also small animals present. The calculated height at the withers for a single sheep from Site 13 amounted to 56.7 cm (Feature 40), and in the case of

²⁹ Załuska 1985, 420.

³⁰ Lasota-Moskalewska 1989.

Site 17 the values fall within the range from 59.6 to 60.1 cm (Feature 15). The measurements indicate that these were animals similar to the contemporary Polesie sheep, “Świn-iarka” sheep, “Wrzosówka” sheep or “Karnówka” sheep, in whose case the value of the above-mentioned conformation trait is similar³¹.

In the analysed group of remains from Samborowice, a negligible share of wild mammals was found in the case of both settlements. The list of animals living freely in the wild included species such as the deer, roe deer and European beaver. Each of them lives in a specific biotope, which may be indicative of the characteristics of the environment. The deer is an animal which prefers forest biotopes or biotopes where forests have a predominant presence³². The roe deer, on the other hand, is an animal species which is well-adapted to living both in environments where forests prevail and in open spaced areas³³. Aquatic areas surrounded by forests create the right biocoenoses for the beaver³⁴. Assumptions about the landscape in the area of the settlement complex in Samborowice can also be made on the basis of identified bird remains and habitats³⁵. The presence of the black grouse demonstrates the existence of vast forest areas. Characteristic of this zone is also the predatory buzzard, which prefers forest perimeters or thinner forest complexes. Cranes, on the other hand, preferred wet and swampy areas, while ducks and geese were attached to aquatic areas. The wild mammals and birds identified within the settlement complex in Samborowice confirm the existence of various landscape zones, including agricultural and forested areas. Wet and aquatic areas (and likely also stagnant water) were another clear element of the local landscape.

During macroscopic examination of the bones, numerous post-consumption traces were found. Most of them were connected with cutting the carcass and meat. They were related to various stages of preparation for consumption. These were signs of dismemberment, i.e. division of the skeleton at joints, chopping in various places and various directions (along the grain, across the grain, diagonally) and signs of filleting, i.e. removal of meat from the bone. The above were found in the case of bones of cattle, pigs, sheep/goats, as well as wild animals. Numerous fragments bore signs of gnawing, most likely by dogs. Moreover, degenerative changes likely resulting from use of the animals for cart pulling were also found on individ-

ual cattle bones (Site 13, Feature 49; Site 17, Feature 13) in the collection being analysed.

Conclusions

The functioning of La Tène settlement in Silesia can be dated to the sub-Atlantic period, i.e. the time of rapid shrinkage of forest areas and changes in their species composition as a result of intensification of human economic activity. At the time, the significance of oak forests was in decline, with the Scots pine becoming the predominant species and the share of spruce and hornbeams increasing. In the southern part of the country, a development of beech-fir forests and oak-hornbeam forests could be observed, which was facilitated by the initially temperate and humid climate³⁶. Based on the analysis of preserved remains of wood, an assumption can be made that stands comprised of deciduous trees prevailed in the forest communities in the neighbourhood of the site being analysed.

The archaeobotanical material from the La Tène period from the site in Samborowice includes remains of arable crops, mainly cereals. This fact indicates that plant cultivation was an important task for the Celtic people in the area of contemporary Upper Silesia, which is further supported by data from the neighbouring areas³⁷. Attempts to define the structure of crops and their diversification in each area proves somewhat difficult. This is mainly due to the fact that there are too few comparable sources from the individual regions and chronological periods. Based on the results of archaeobotanical analysis of plant remains, it is possible to recreate a set of species cultivated in the past, but specifying the actual share of each species in crops in the past at the level of a single sit, region or cultural unit is much more difficult³⁸. The results from Samborowice in the form of a set of cereals characteristic of La Tène culture settlements from Central Europe suggest that the set of remains being analysed comes from a period when changes to the selection of cereals had yet to occur. It might be that the climate and edaphic conditions in the south-western part of the country did not force the La Tène community to reorganise its crop production at the time.

Based on the obtained archaeozoological data, it can be concluded that the fundamentals of the economy of communities residing in the settlements in Samborowice do not deviate from the model known from other La

³¹ Hołub 1938, 21; Folejewski 1948, 11–12.

³² Dziągiewlewski 1973, 65.

³³ Pielowski 1984, 143.

³⁴ Pucek 1984, 149.

³⁵ Snow/Perrins 1998.

³⁶ Środoń 1973.

³⁷ Danielisová 2018, 190–191.

³⁸ Lityńska-Zajac 2005, 485–489.

Tène culture sites in Central Europe. The population in this period of history applied a model of economy based on agriculture and livestock rearing, with cattle being the most important animals, followed by pigs and small ruminants interchangeably. Only on some sites did cattle bones rank third, e.g. in Roseldorf in Lower Austria³⁹; Brno-Královo Pole, Mistřín and Velké Hostěrádky in Moravia⁴⁰, or second, e.g. in Ohrozim and Strachotín in Moravia⁴¹, in terms of number. However, differences can be seen with regard to the amount of cattle remains. In the early La Tène period, cattle accounts for more than 50 % of all livestock. However, in the middle La Tène period, the average proportions of the basis species change. In this period, each of the species – cattle, sheep/goats, pigs – account for about one third of the identified bones, but with cattle retaining the edge⁴². In this context, it is worth noting that on Site 13 in Samborowice cattle bones account for more than 70 % of all domestic animal remains, with the shares of sheep/goats and pigs in this group of mammals amounting to 13.4 % and 10.9 %, respectively. On Site 17, on the other hand, the share of cattle bones is much smaller, losing to the farming of small ruminants and pigs. In this case, the share of cattle bones amounts to no more than 39 %, sheep/goat bones to 31.3 %, and pig bones to 26.7 %. The detected differences show that the structure of livestock reared by the people inhabiting Site 13 followed the model from the early La Tène period. However, it cannot be ruled out in this case that the obtained data were affected by the fact that the bone sample was relatively small. It is worth noting here that in some rural settlements dated at the mid La Tène period a predominance of bones of small ruminants or pigs can be clearly observed, as illustrated by the analysis of materials from the settlements in Zagórzycze in western Lesser Poland⁴³. Perhaps this was due to a slightly different economic model, which was the result of the presence of people engaging in more advanced craftwork, for whom livestock rearing was too time-consuming. Similarities with Central European sites can also be observed with regard to other aspects of utilising livestock. Analysis of the structure of bone remains for individual carcass classes shows that La Tène culture communities, similarly to the people residing in Samborowice, most frequently consumed those parts of the carcass which were attractive in culinary terms. Similarities can also be observed when it comes to the slaughter of animals. The ones taken

for slaughter were primarily adult animals, which shows that they were also used for other purposes. A common trend in livestock management of the people residing in Samborowice and those inhabiting other areas of Central Europe occupied by the Celts can also be observed with regard to the percentages of wild animals. On sites from the early La Tène period, the average percentage thereof amounts to approx. 5 %, and in some cases even 10 %. Therefore, it can be concluded that hunting in this period was a regularly performed task at least in some settlements, significantly enriching the diet⁴⁴. On the other hand, from the middle La Tène period onwards, this percentage rarely exceeds 1–2 %⁴⁵. It would seem that this fact is connected with the intensification of agriculture and extension of crop cultivation accompanied by limitation of the habitats of game animals. The same situation can be observed in the case of the two settlements in Samborowice, where the share of wild animals is negligible.

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³⁹ Bruckner-Höbbling 2009, 158.

⁴⁰ Čižmář 2015, 447.

⁴¹ *Ibidem*.

⁴² Trebsche 2014, 353–356.

⁴³ Gocman/Pieńkos 2012, 334 Tab. 1.

⁴⁴ Trebsche 2013, 217–220.

⁴⁵ Méniel 2002, 227.

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