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## SPATIAL DEVELOPMENT OF THE SETTLEMENT COMPLEX AFFILIATED TO THE TRZCINIEC CULTURAL CIRCLE AT SITE 1 IN POLESIE IN CENTRAL POLAND

### ABSTRACT

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This article presents the territorial development of a settlement complex which occurred over a span of time between 1700–1100 BC. In this period we observe a few “settlement episodes” and record the historical development of 25–30 generations of communities within the Trzciniec cultural circle. The site had a complex spatial structure that changed (modified) over time. A number of settlements, cemeteries and single graves were singled out/identified. The model of spatial development of a settlement complex in Polesie is based on the changes in pottery styles, planigraphy analysis and the results of <sup>14</sup>C dating. A system defining/specifying the dynamics of settlement changes and the ritual space of the Trzciniec cultural circle in Polesie was created on the basis of this data. The period of use of these particular settlements ranged from 50/150 right up to 600 years. The largest settlement covered an area of ca 1 ha, the smallest 0,3–0,5 ha.

The settlement complex in Polesie is unique in comparison to the other sites of the Trzciniec cultural circle. This complex was widespread, consisting of both the settlement and cemetery areas and it continued to be occupied continually for over 660 years.

Key words: Trzciniec cultural circle, Bronze Age, settlement, spatial organization

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## INTRODUCTION

The large excavations undertaken due to the expansion of the transport infrastructure of the country, have allowed us to verify many of the earlier interpretations formulated with regard to the size of the settlements and cemeteries, their spatial arrangement, chronology and regional development. We rarely encounter the opportunity where – in the same area – it is possible to analyze the dynamics of the development considering the entire settlement complex, which includes several villages and cemeteries/sepulchral zones. So far the only one in the whole area of the Trzciniec ecumene circle – is the settlement complex in Polesie, recorded within an area of approximately 17 hectares, which has already been the subject of a separate monography (Górski *et al.* 2011).

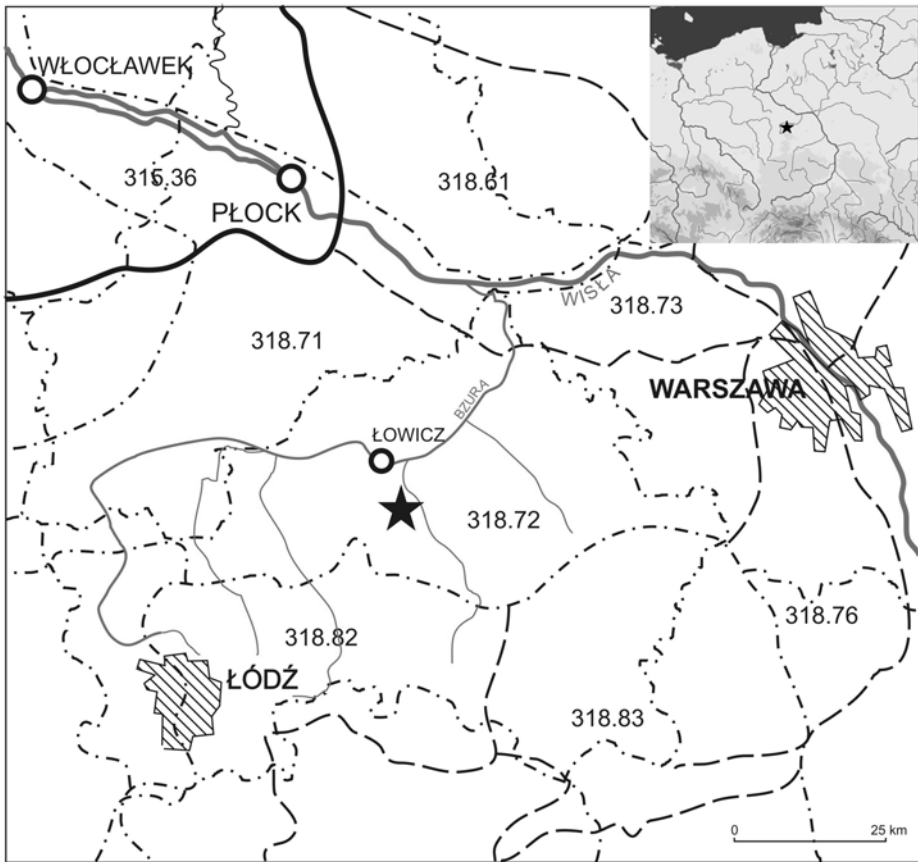


Fig. 1. Location of site 1 in Polesie, com. Łyszkwice, Łódź voivodeship in light of physical-geographical regionalization (according to Kondracki 1994)

The present article is intended to characterize the territorial development of the complex. It existed for most of the second thousand BC (c. 1700–1100 BC). During this period, one can observe a series of “settlement episodes”, with almost thirty generations of the Trzciniec cultural circle (TCC) community being recorded, co-creating for about 600 years domestic dwellings and ritual-ceremonial zones. As for the periodization of the TCC, the already mentioned chronological range falls into the entire period of the development of this cultural unit (Górski 2007; Makarowicz 2010).

Site 1 in Polesie, com. Łyszkowice, Łódź voivodeship has been discovered in the course of surface surveys associated with the construction of the A2 motorway, carried out by archaeologists from the Konrad Jażdżewski Foundation in Łódź. The rescue excavations were conducted on a large-scale in 2005–2008 by a research team from the University of Łódź Foundation under the supervision of prof. dr hab. Lucyna Domańska and dr. hab. Seweryn Rzepecki (Domańska *et al.* 2012).

The site is located in the south-west of the Masovian Plain (Fig. 1), on the sandy belt of the vast plateau, bounded by the two valleys of right-hand tributaries of the Bzura River — the Ruczaj in the west and the Zwierzynki in the east (Górski *et al.* 2011; Twardy, Forysiak 2011). It is situated in the northern end of that plateau — with an almost flat surface where the height differences amount to a maximum of 4–5 m. The main soil type around Polesie is a podzolic soil formed from clay and loose sands (Twardy, Forysiak 2011).

The surface of the site was destroyed to a large extent due to the impact of cultural factors (such as settlements from different periods, economic activity and the accompanying deforestation) and natural factors (aeolian processes and water erosion), as well as modern agricultural treatments and the storage of waste. As a result, a large part of the features have been destroyed. Therefore, it was not possible to reliably estimate their original numbers (see more — Górski *et al.* 2011). For this reason, the discussed site can be classified as sub-surface with a limited cognitive value. Important support for the chronological and spatial interpretations suggested in this work comes in the form of analysis of the technology and traditional styles of pottery, the planigraphy of this kind of material, especially the distribution of the diagnostic fragments, and — last but not least — the developed radiocarbon chronometry.

The analyzed site has an extremely complex spatial structure. In the course of the study a number of spatial and functional units have been distinguished, which are identified on the basis of pottery sherds and human bone density as well as the location of immovable features (Fig. 2). They correspond to specific zones of settlement, economic and ritual (sepulchral) activities. These zones covered different surfaces and were characterized by the various source materials found. A total of six settlement zones (dwelling-utility — A–F, Fig. 3: A) and five funeral zones (I–V, Fig. 3: B) have been determined.

In the central part of the site, settlement zone A has been distinguished. Its western boundary is not very clear, and its real limitation is only noticeable on the east side. The spatial arrangement of settlement A is delimited by means of a cluster of features and

ceramics, and its surface can be estimated at 0,7–1 ha. It partially overlaps with the sepulchral zones III and IV. As for the settlement zone E, designated northeast of it, it is separated by a narrow belt where there were less concentrations of pottery sherds. In the western part of zone A, there was a lack of pottery finds from the region where features occurred.

Settlement zone B is located in the eastern part of the site, about 150 meters from settlement A. The concentration of pottery only partially coincides with the cluster of features. It occupies an area of approximately 0.5 hectares and its boundaries are clear. In its vicinity, grave I87 (sepulchral zone V) has been recorded.

In the south-western region of the site, settlement zone C has been distinguished. It consists of a cluster of features and not a very intense concentration of characteristic ceramics. Settlement zone C has rather clear boundaries to the east, south and west. On the north side, it is adjacent to zone D. The surface can be estimated at 0.3–0.4 ha. About 40–50 meters from the southern boundary, there are two graves located in the sepulchral zone II.

Settlement zone D is adjacent to the north of zone C. Considering its location towards zone F, more to the north, it is separated by a 20–40 meter belt of pottery. Its range is determined by a cluster of pottery sherds — which is less intense in the east and west — but there are almost no immovable features. However, the saturation of the artefacts found in the cultural layer in this part of the site is unusually large. The surface of settlement D, as determined on the basis of the pottery cluster, can be estimated at 0.3–0.4 ha.

Settlement zone E has been distinguished in the north-eastern part of the site. Its range partially overlaps with sepulchral zone I. It forms one of the smaller settlement systems, occupying an area of about 0.3 hectares, where there are sherds of pottery and a small number of features.

Settlement zone F is located in the north-western part of the site. Its boundaries are relatively clear. Only on the southern side can you see the slight thinning of the dispersion of ceramics. The surface of the settlement can be estimated at 0.6–0.7 ha.

The first of the necropolis — sepulchral zone I — has been distinguished in the north-eastern part of the investigated area. A large number of individual burned human bones have been recorded here. The cultural layer also contained numerous fragments of poorly preserved pottery, which probably were the remains of grave goods. A series of radiocarbon dates from the bones clearly indicates their relationship with the “Trzciniec” settlement phase of the site. This zone was considered to be the remains of a large cremation cemetery. Its range, as measured by means of the dispersion of bones and pottery, was about half a hectare. The burial area on the west side coincides with settlement zone E.

In sepulchral zone II, two preserved graves (features F1248 and F1249) have been registered, where the bones of the dead were burnt. They have been discovered in the south-western part of the investigated area. The discussed area, from its northern part was adjacent to settlement zone C. We cannot exclude the possibility that originally the cemetery was larger, and it was destroyed as a result of subsequent economic-settlement activities.

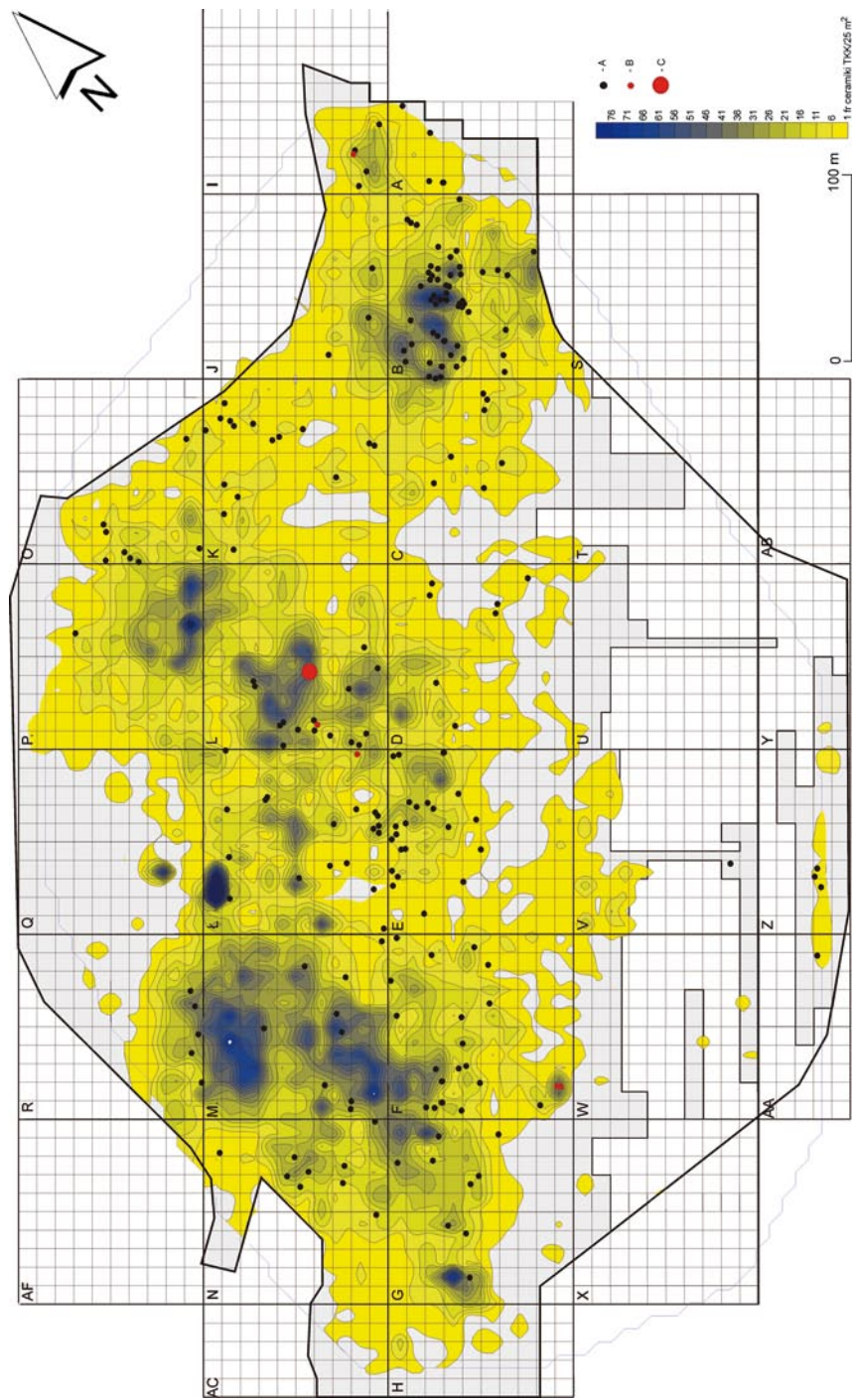


Fig. 2. Polesie, site 1, com. Łódź voivodeship. Dispersion of ceramics and immovable features of the Trzciniec cultural circle: A — settlement features, B — graves, C — collective burial covered with an earthen mound



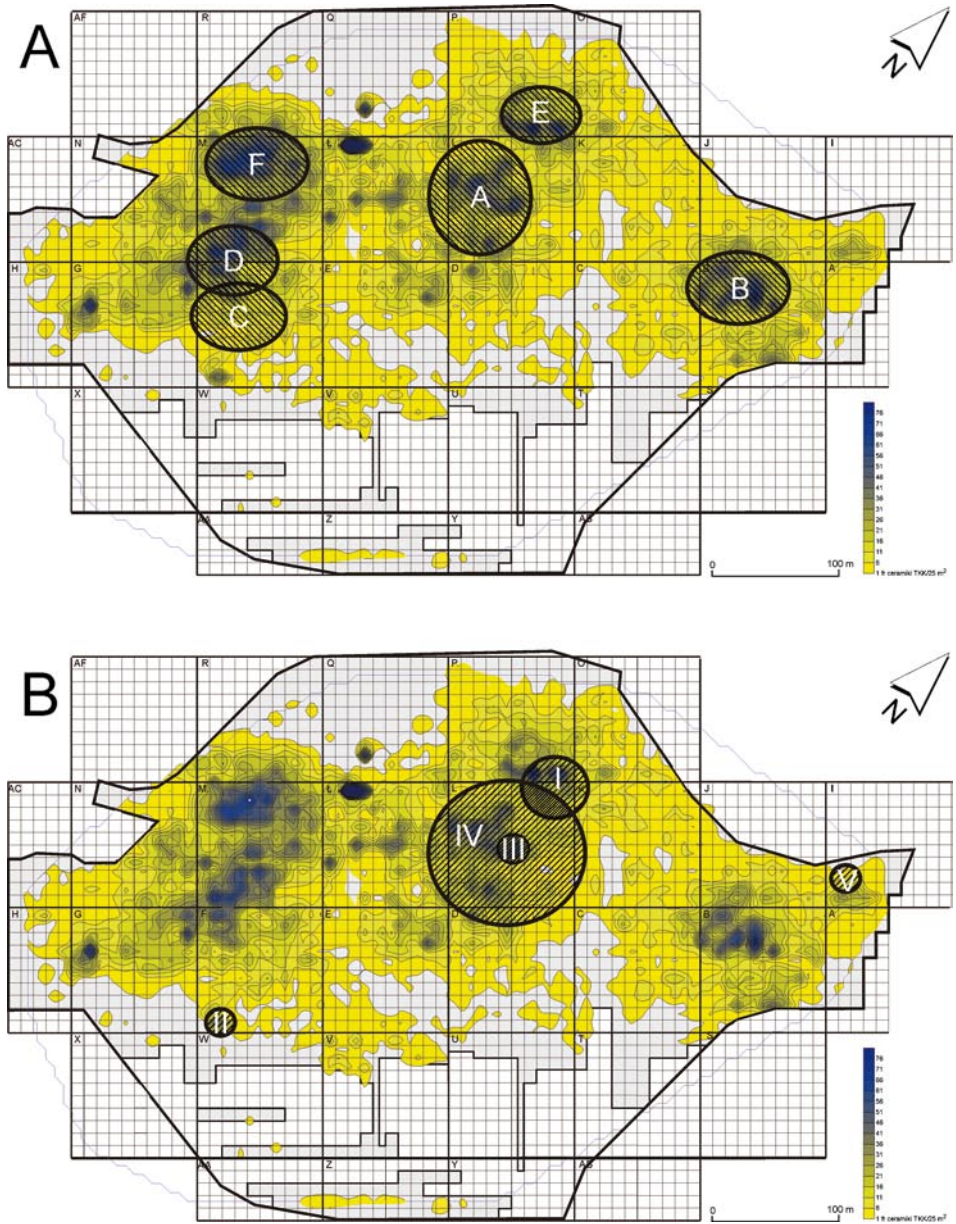


Fig. 3. Polesie, site 1, com. Łyszkowice, Łódź voivodeship. A — location of settlement zones, B — location of sepulchral zones

Sepulchral zone III is a collective grave L1182b, located in the central part of the site. It was originally covered with an earthen mound, whose remains have been visible on the surface in the form of an extensive “spot” of darker soil.

In the neighbourhood of zone III, north, west and south of it, the sepulchral zone IV has been distinguished, which included graves (the remains of four burials have been found), single burnt bones and ceramic deposits in the form of whole vessels. Most likely, these are the remains of a bi-ritual cemetery and a ceremonial zone established around a collective burial under the barrow.

Sepulchral zone IV has been designated by an individual single cremation burial (I87), discovered in the eastern part of the site.

The settlement and sepulchral zones, mentioned above, form the basic organizational structure of this settlement complex, where it is possible to analyze its use and organisation of space.

## I. RELATIVE AND ABSOLUTE CHRONOLOGY OF THE SETTLEMENT COMPLEX

Most of the pottery, which is the main useful records for chronological analyses, has been found on the surface layers of the site. Clear planigraphic systems have been disturbed, due to the intensity and long-lasing period of utility of particular parts of the site as well as the subsequent post-depositional processes. The material found in the features is very limited. Therefore, a full analysis of the dynamics considering changes in pottery in terms of style and technology is very difficult. Nevertheless, a large series of radiocarbon dates is helpful which determine the chronology of individual features and movable artefacts (Górski *et al.* 2011; 2012). On the other hand, the analysis of rare metal products is not very beneficial (Górski *et al.* 2011; 2012).

Referring to the analyzed site, 43 radiocarbon dates have been obtained from human and animal bones and carbon deposits embedded on the vessel walls (Fig. 4). The sum of the probability distribution for all radiocarbon determinations is included in the range 1610–1210 BC ( $1\sigma$ ), or in the range of 1700 to 1050 BC on the  $2\sigma$  level (Fig. 5). This suggests a long, more than six hundred years, development of the studied settlement complex. The continuous chronological sequence has also been confirmed by the period when these cemeteries were used.

The reflections concerning the spatial development of this settlement complex have been preceded by an attempt to develop a local system of periodization, which reflects the specificity of changes with regard to mass finds at the site. Experience shows that the most significant changes over time are visible on pottery decorations. The materials have been arranged within the framework of the so-called stylistic groups (SG), which should be regarded as analytical units that are specific sets of characteristics. The list of indicators of

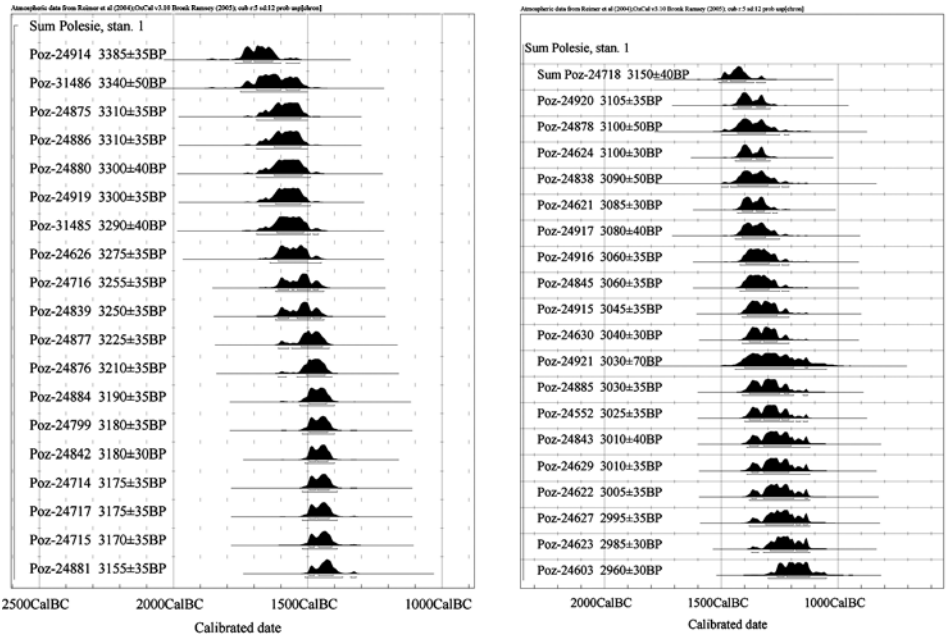


Fig. 4. Polesie site 1 com. Łyszkowice, Łódź voivodeship. The sum of the probability distribution of particular radiocarbon determinations (according to Górski et al. 2011)

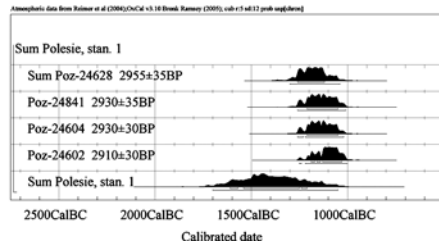
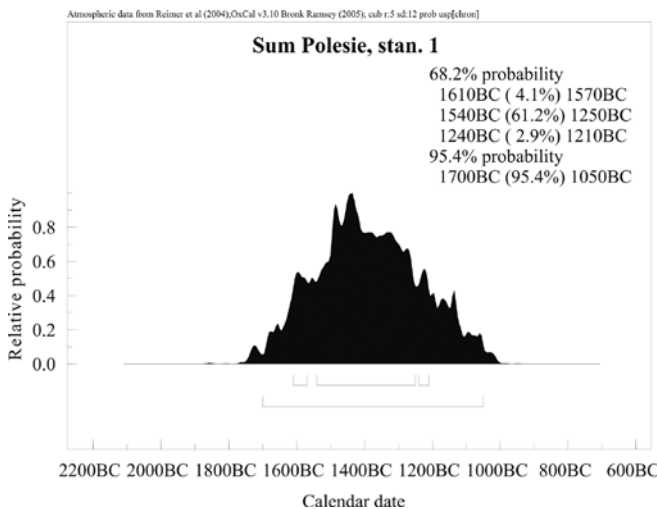


Fig. 5. Polesie, site 1, com. Łyszkowice, Łódź voivodeship. The sum of the probability distribution of all radiocarbon determinations (according to Górski et al. 2011)





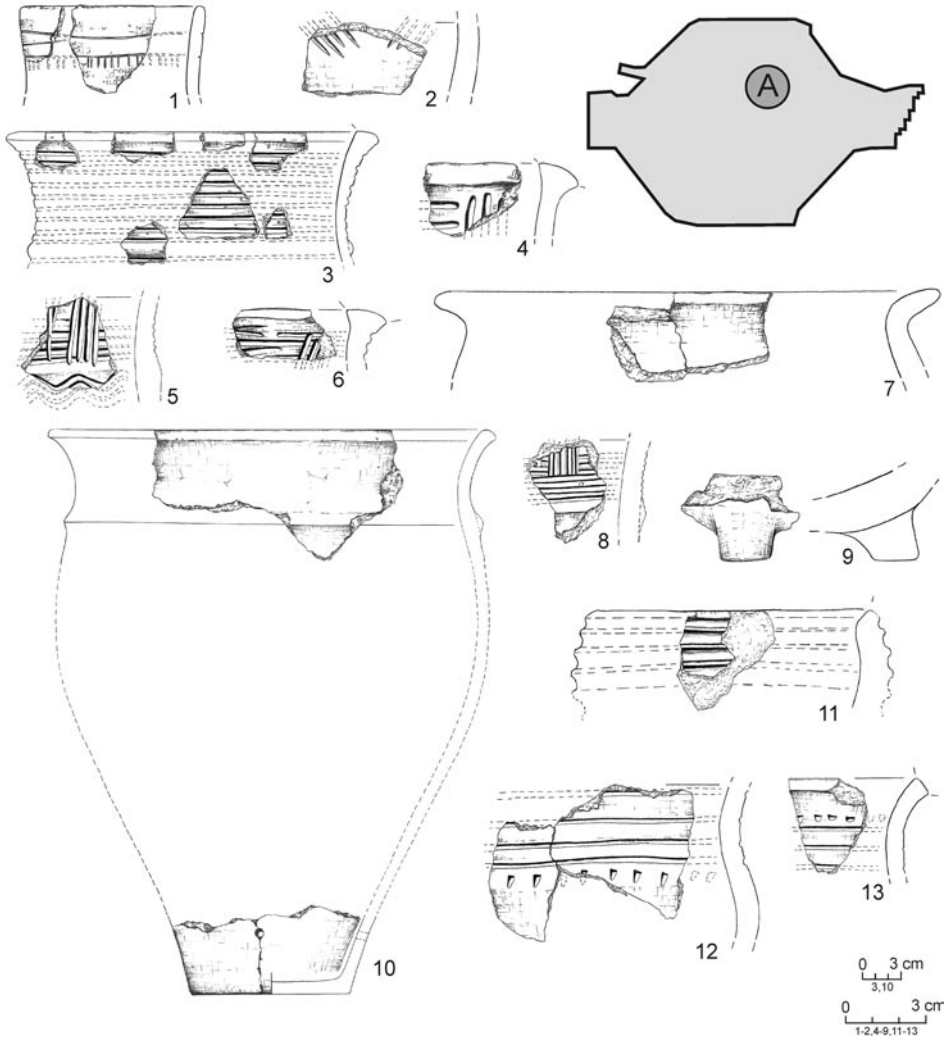
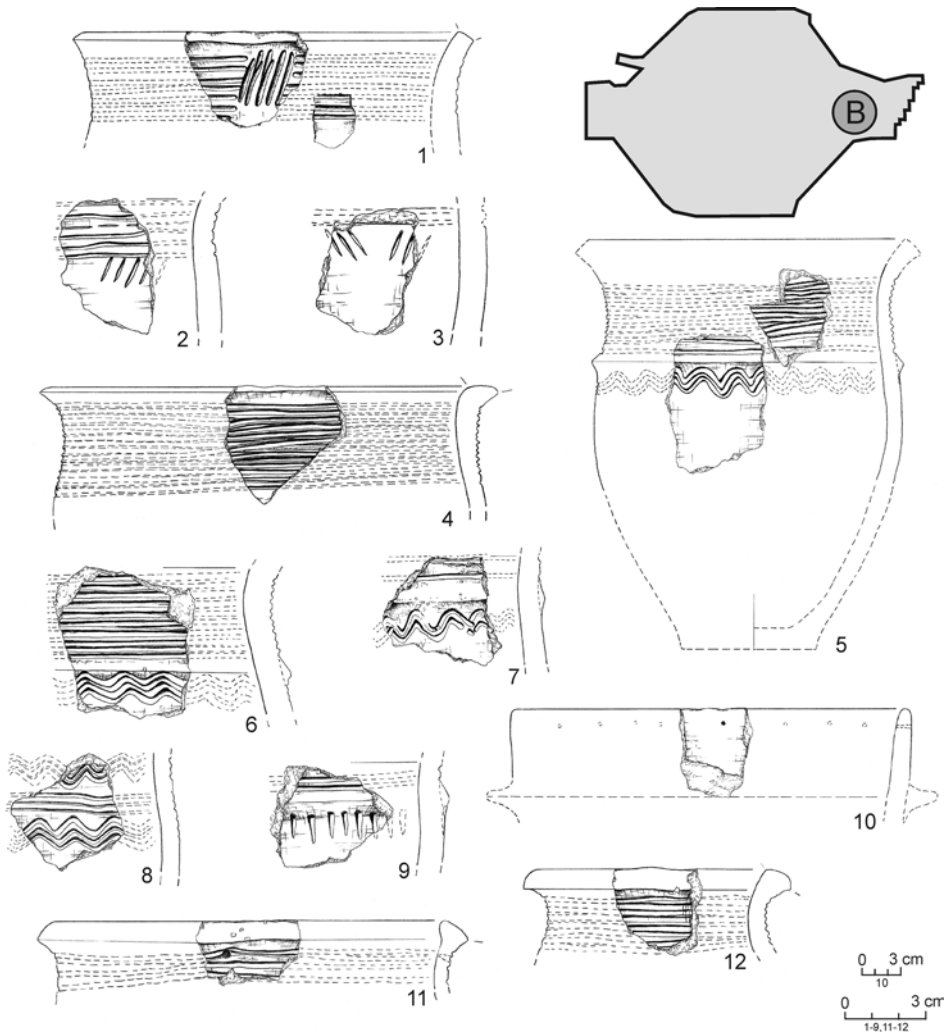


Fig. 6. Polesie, site 1, com. Łyszkowice, Łódź voivodeship. Settlement Zone A — the selection of the Trzciniec cultural circle pottery

specific stylistic groups has been limited to the most characteristic elements whose chronology can be correlated with planigraphic data, radiocarbon designations and dated analogies from other areas (Górski *et al.* 2011; 2012). Selecting the most distinctive stylistic elements, characteristic for each particular domestic use, one can trace the development of their individual sequences. (Fig. 6–19).

The most numerous group of pottery consists of the materials affiliated to the classical phase of the Trzciniec cultural circle (TCC). Their distinctive features are slightly profiled



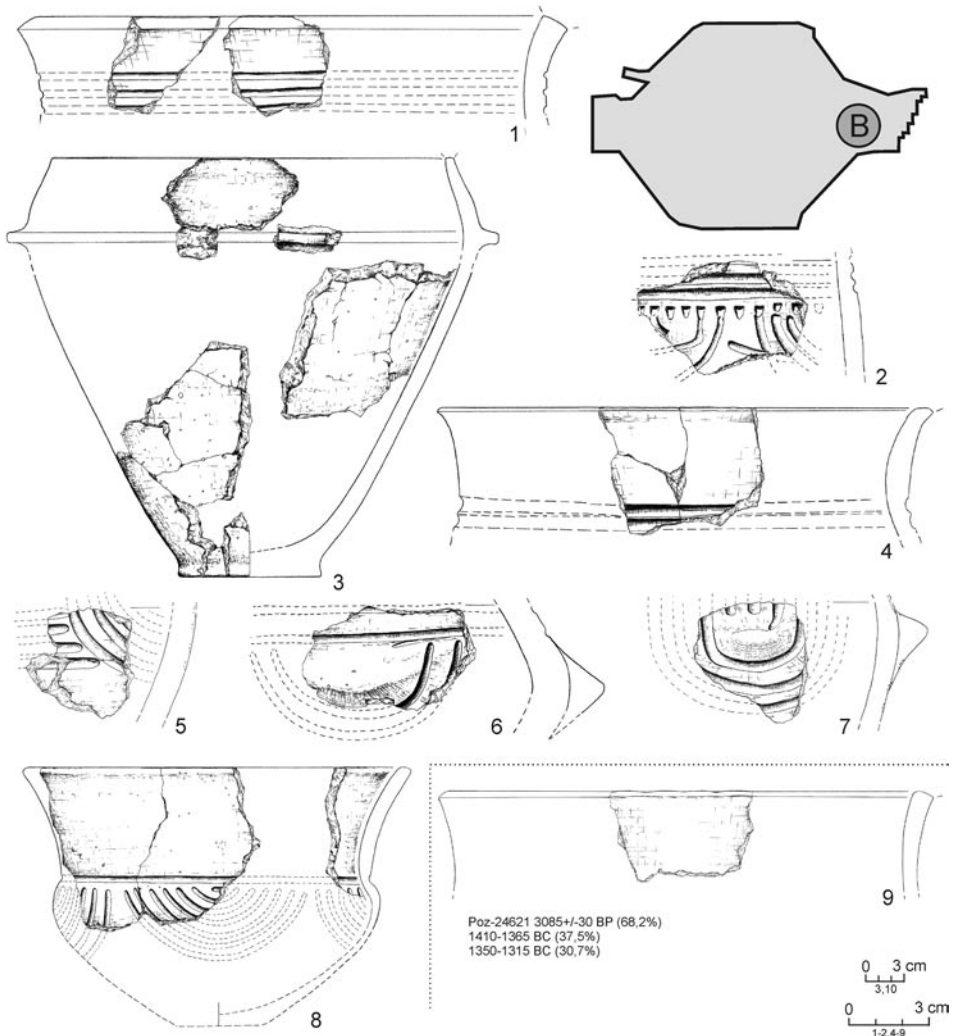
**Fig. 7.** Polesie, site 1, com. Łyszkowice, Łódź voivodeship. Settlement Zone B — the selection of the Trzciniec cultural circle pottery regarding the “classical” stylistic features SG 1 (1–3) and SG 2a (4–8)

pots, beakers and vases decorated mainly with linear horizontal motifs (strips and grooves), accompanied by other motifs (e.g., stamp impressions). Its specificity is the location of the ornamentation in the upper parts of the vessel and the frequent presence of a thickened rim with the obliquely or horizontally cut edge. These materials have the correlations within the periodization units distinguished in other areas, such as Kuyavia (HT 1, HT 2, HT 1/HT 3 and HT 3 — Czebreszuk 1996; Makarowicz 1998; 2010) and the western Lesser Poland (complexes of type A1 and A2 — Górski 2007).

Within the materials of the classical phase it is possible to differentiate a group of what are potentially the oldest features, genetically related to the older genetic background — the Iwno culture and the Linin group of the Neman culture (Górski *et al.* 2011). The first of them are represented by fragments of full pedestals, tulip-shaped rims and metopic, rafter-shaped and segmented (double) incised lines located around the necks of vessels (Czebreszuk 1996; Makarowicz 1998) (Fig. 6: 2, 4, 9; 7: 1–3; 10: 4,5; 15: 1–3). The set of “Iwno” features are defined as stylistic group 1 (SG 1). The second group of sources, set up within the framework of the potentially early styles of the classic phase have parallels in the Sub-Neolithic “Forest” cultures — mainly in the “Linin” materials (Kempisty 1972; 1973; Józwiak 2003). It has been identified as a stylistic group 2 (SG 2). The group has been defined on the base of the following features: a multiplied wavy line ornament (a stylistic subgroup — SG 2a, Fig. 6: 5; 7: 5–8; 15: 8), horizontal grooves combined with stamp impressions (a stylistic subgroup SG 2b, Fig. 6: 12, 13; 7: 9; 10: 1, 3; 11: 1–2; 15: 5–7; 16: 4, 8) and horizontal grooves interrupted by vertical impressions and holes under the edge of S-shaped pots (Fig. 7: 10). These materials have a number of similarities in the TCC environment from Mazovia and Podlasie (Gardawski 1959, tables; Wawrusiewicz 2011).

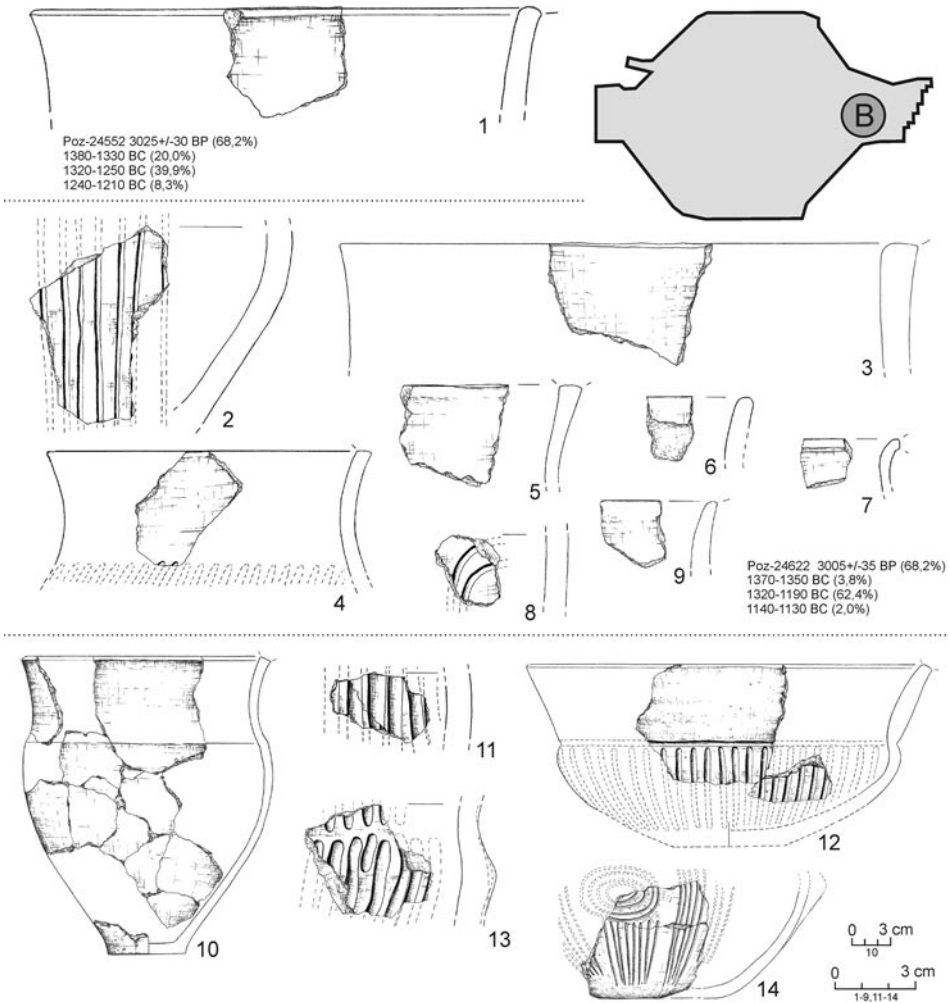
The absolute chronology of the first of these styles — “post- Iwno” SG 1, reflects the oldest radiocarbon dates obtained from the bone fragments from the destroyed burial place in the north-eastern part of the site (funerary zone I) and as a result of planigraphic analyzes. It allows us to determine a date for this group at the turn of the eighteenth/seventeenth and seventeenth century BC (Fig. 20). The beginning of the stylistic development SG 2 has been obtained from the radiocarbon determinations which came from the graves of F1249 and F1248. After the calibration sequence (68.2%) the result was in the variation range 1690 — 1625 BC for the first feature, and 1575 — 1525 BC for the second one (Górski *et al.* 2012). Planigraphic analyzes indicate that its decline occurred in the late fifteenth and fourteenth centuries BC (Fig. 16, 20).

Moreover, there are also radiocarbon dates for the materials from the collective burial L1182 (XVI–XIV century BC) within the range of the classical phase. However, the stylistic features of the pottery coming from the grave are not very clear (Fig. 17). The established dates indicate a long period of use, which is a common feature of TCC burials (Makarowicz 2003; 2010, 244n). At the same time, the scope of the dates shows there was a long duration of the classical phase (Fig. 17; 20). In the course of its utility, new and different features appear in terms of quality. Excavated from grave Ł150 and radiocarbon dated to the first half of the fifteenth century BC, excavators uncovered a small beaker decorated with a knob surrounded from the top by multiple grooves (Fig. 18: 2). It is the oldest (confirmed by radiocarbon dating) manifestation of changes in the stylistics and a symptom of the emerging ornamental style the “Polesie type”, which is called on the base of the researched site (Górski *et al.* 2011; 2012). As for the discussed stylistics, vessels richly decorated with knobs, surrounded at the bottom with arched grooves are distinctive as well as decorative (Fig. 8: 6–7, 11: 6, 9, 12: 1–2, 5, 13, 3). There are also several discovered examples in which



**Fig. 8.** Polesie, site 1, com. Łyszkowice, Łódź voivodeship. Settlement Zone B — the selection of the Trzciniec cultural circle pottery regarding the “transitional” stylistic features SG 2 (1) and SG 3 (2, 5–7) within the radiocarbon determinations of the pottery coming from the accumulation layer B24d (9)

the groove motifs were replaced by impressions of a metal object (Fig. 11: 5, 12, 1). The stylistics of the “Polesie type” occupies the middle place between the materials of the classical phase and later, which falls into the period at the turn of the fifteenth / fourteenth and fourteenth century BC with reference to absolute chronology. It was probably functioning parallel to the preceding “classical” (SG 2) phenomena and the subsequent stylistics SG 4 (Fig. 20). Undoubtedly, the pottery decorated in this way, had never fully dominated the



**Fig. 9.** Polesie, site 1, com. Łyszkowice, Łódź voivodeship. Settlement Zone B — the selection of the Trzciniec cultural circle pottery regarding the “late” stylistic features SG 4a (11,13) SG 4b (2, 12) and SG 5 (14) within the radiocarbon determinations of particular sources: the level of the accumulation layer in trench B33b (1 ); feature B372 (2–9)

entire set of ceramic vessels. The containers ornamented in this manner occurred at the same time as the forms of classical and late Trzciniec traits. Few analogies to the discussed stylistic group are known in Mazovian and Podlasie enclaves of the TCC (see examples — Górski 2011).

A clearly distinctive group of vessels is that decorated with continuous sets of vertical grooves, located on the vessel body. They have been assigned to the stylistic group 4 (SG



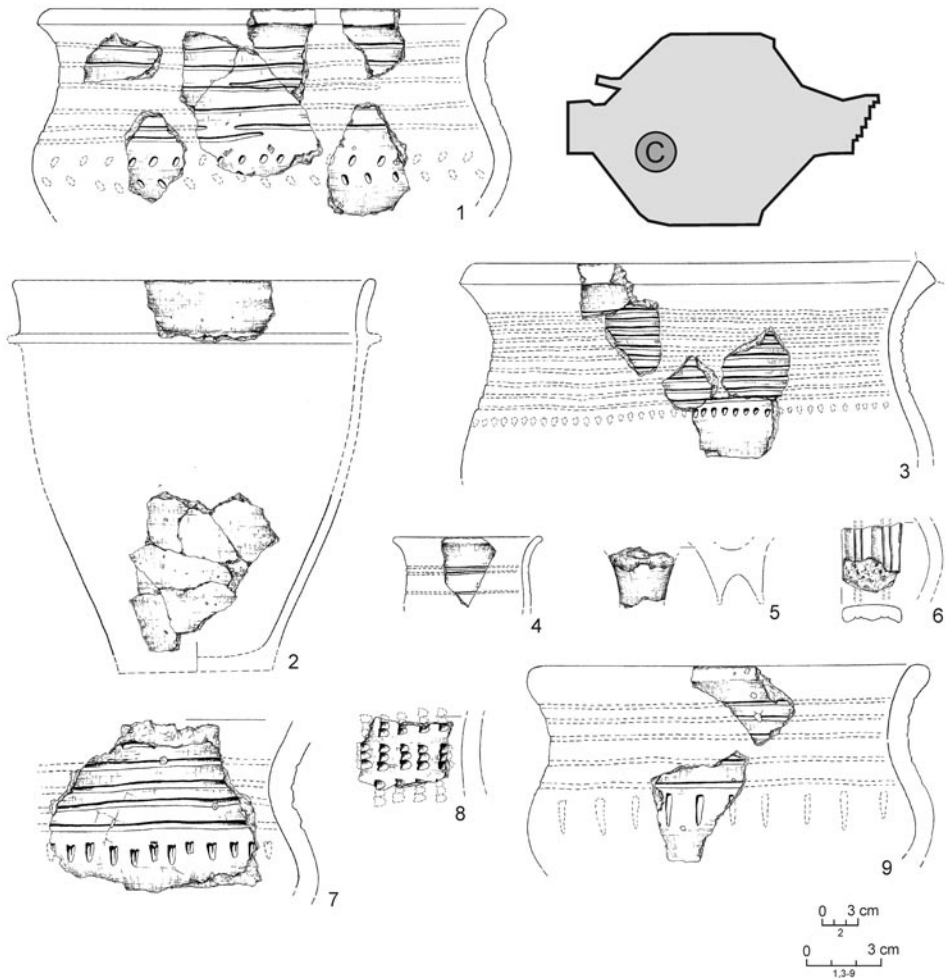


Fig. 10. Polesie, site 1, com. Łyszkowice, Łódź voivodeship. Settlement Zone C — the selection of the Trzciniec cultural circle pottery

4). In the light of the planigraphic analyzes, it seems reasonable to distinguish the division within which it is necessary to classify the sets of closely spaced grooves (SG 4a; Fig. 9: 11, 13; 12: 3; 13: 8, 10–11; 18: 11) and locate the distances from each other — SG 4b (Fig. 9: 2, 12; 13: 2; 14: 2). These motifs indicate the late stage of development of TCC groups (Górski 2007, where further literature). Dates for the discussed group of materials generally refer to the thirteenth and twelfth centuries BC. The oldest vessels decorated with vertical grooves probably appeared in the fourteenth century BC and the youngest were even known in the eleventh century BC (Fig. 20). Such chronology can be confirmed by the use

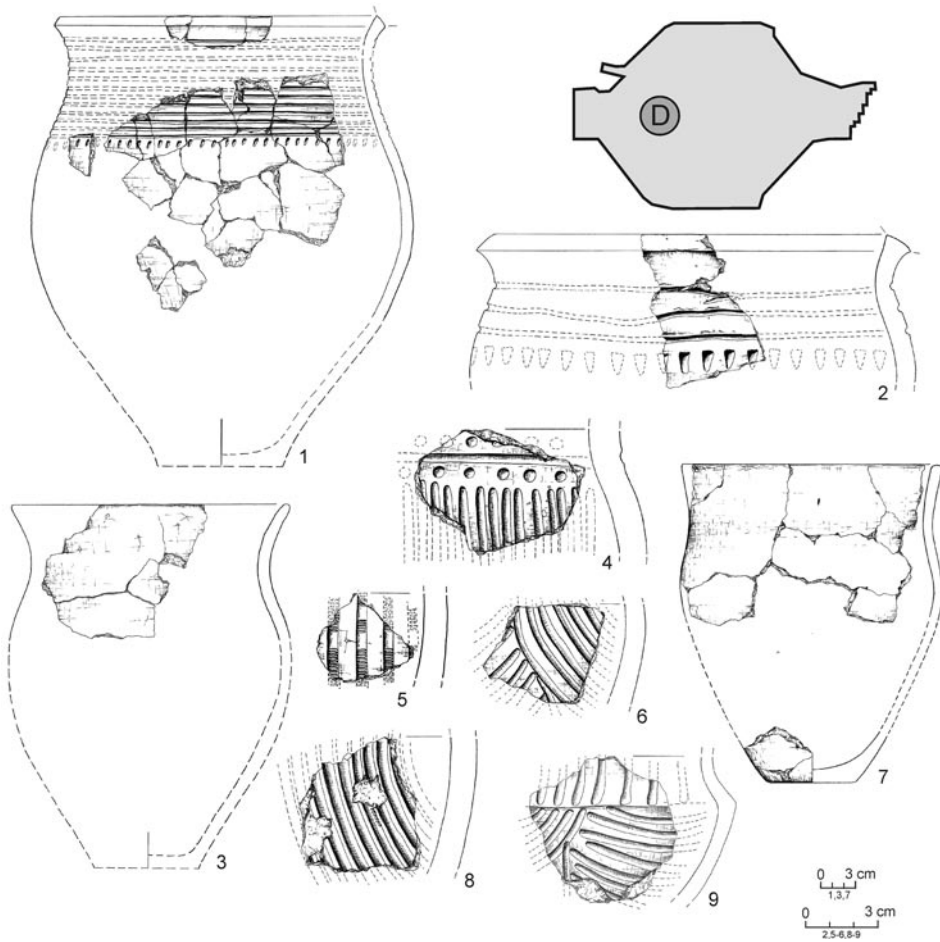


Fig. 11. Polesie, site 1, com. Łyszkowice, Łódź voivodeship. Settlement Zone D — the selection of the Trzciniec cultural circle pottery

of radiocarbon dating the materials that came from feature B372 (Fig. 9: 2–9). The probability distribution is in the range 1320–1190 BC (62.4%), while the sequential probability is 1270–1210 BC (68.2%). Vessels decorated with vertical grooves were used synchronously with undecorated S-shaped pots and beakers with well differentiated funnel necks (Fig. 11: 3, 7, 13: 1, 5). The fragments of this vessel have been discovered in the context of cremation burial I87 (Fig. 19). The  $^{14}\text{C}$  date obtained here indicates the range of 1380–1250 BC (64.5%) and the calibration, made by the use of a sequential method, has determined the age of the sample from 1305 to 1265 BC (68.2%). It is worth mentioning that considering Polesie, older vessels of this type are also known (Górski *et al.* 2011, fig. 18).

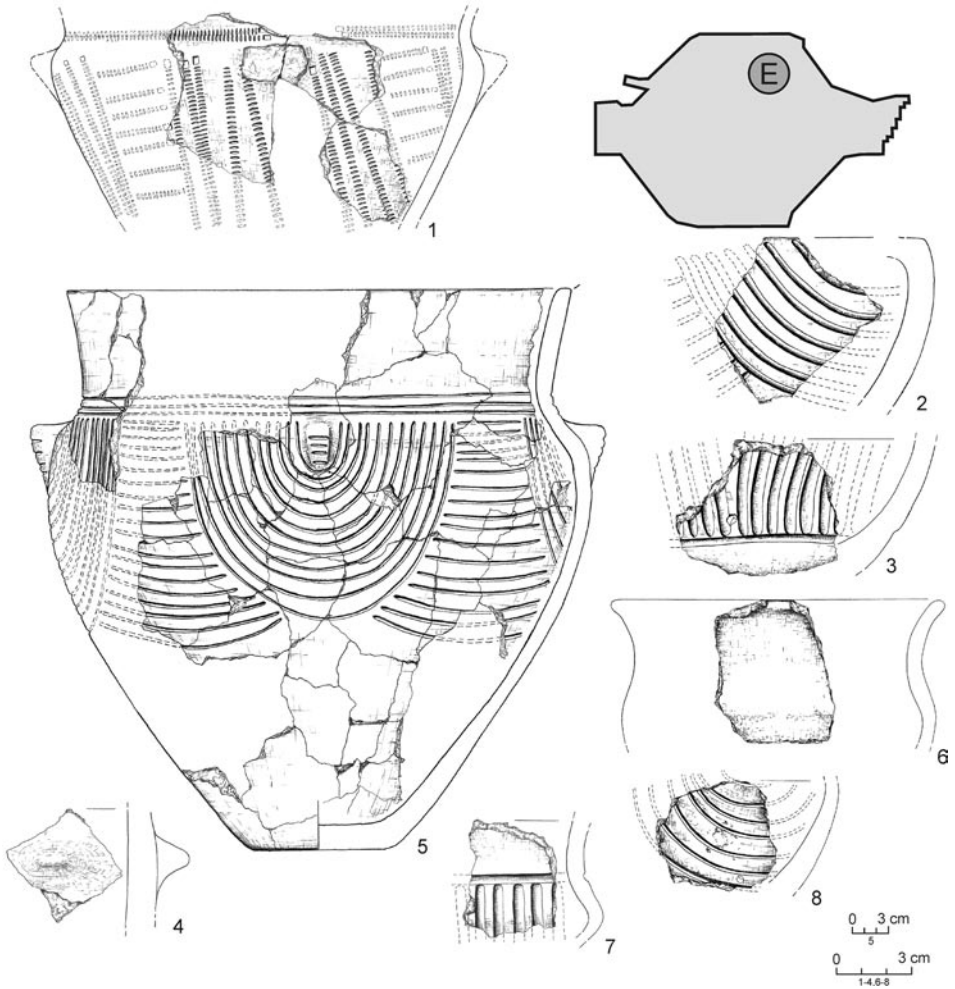


Fig. 12. Polesie, site 1, com. Łyszkowice, Łódź voivodeship. Settlement Zone E — the selection of the Trzciniec cultural circle pottery

The fifth stylistic group (SG 5) is decorated similarly to group 4. It includes pottery, decorated with integral, vertical incised lines, which are often visible on the sharp shoulder of vases or less frequently on bowls (Fig. 14: 5, 12–16, 18: 8–9). Perhaps this style also coincides with the ornamentation linked to the early stages of the Lusatian culture (Fig. 9: 14). There are no absolute dates obtained for the ceramics representing stylistic group 5. However, it seems that it is chronologically the youngest group considering the late-phase materials and its period of function can be dated to the twelfth/eleventh and eleventh century BC (Fig. 20, 21).

These results can be illustrated in a diagram reflecting the stylistic and chronological sequences of development regarding particular settlement-sepulchral zones differentiated within the materials of the discussed site (Fig. 20).

## II. THE DYNAMICS OF THE COMPLEX DEVELOPMENT

The presented model of spatial development with regard to the settlement complex in Polesie is based on the concept of the above mentioned stylistic changes of pottery, planigraphic analysis and <sup>14</sup>C dating results. They provide the background for the construction of a system that reflects the dynamics of settlement changes and the ritual space of the TCC complex in Polesie (Fig. 21).

The range of the oldest settlement is associated with the spread of pottery features within the site indicating the links with the styles of the Iwno culture. These include the fragments of full pedestals, tulip-shaped rims and metopic, rafter-shaped and segmented (double) incised lines located around the necks of vessels typical to this culture. They form the stylistic group 1 (SG 1). The analyzed features are grouped into three areas — western, central and eastern — of the site. Two extreme ones are occupied by the settlements in areas B and C. The central part is the settlement zone A and cemetery zone I. However, there are reasons to state that originally these two parts of the settlement were separated by an empty space with a width of 40–50 m (Fig. 21). It is indirectly indicated by the spatial distribution of vessels decorated with horizontal strips. They are not present in the cemetery mentioned above.

Within the same areas of the site there are visible concentrations of the features typical of the stylistic group 2 (SG2). However, there were some stylistic and technological differences, especially between settlements B and C. Therefore, within the SG 2 two variants — “a” and “b” have been differentiated. As for settlement B, vessels were more often decorated by incised horizontal grooves, wavy lines and holes. Whereas, on settlement C the vessels that dominated were decorated by occasional incised lines and stamp impressions as well as a metopic ornamentation where the horizontal grooves were separated by stamp impressions. Settlement A has revealed more stylistic links with settlement B. When considering cremation cemetery I, we see pottery sherds have been recorded which represent each settlement zone mentioned above. Therefore, we can assume that it was a common space used for three separate economic — settlement units which existed throughout the time of the site. These findings are supported by numerous radiocarbon dates. They show that cremation cemetery I might have originated in the late eighteenth and seventeenth centuries BC and it was used for about 400 years until at least the middle of the fourteenth BC (Fig. 20, 21). Its dating indirectly establishes the time determination of the oldest settlements A, B and C, as well as their typical stylistics — SG 1, SG 2a, SG2b. Moreover, two

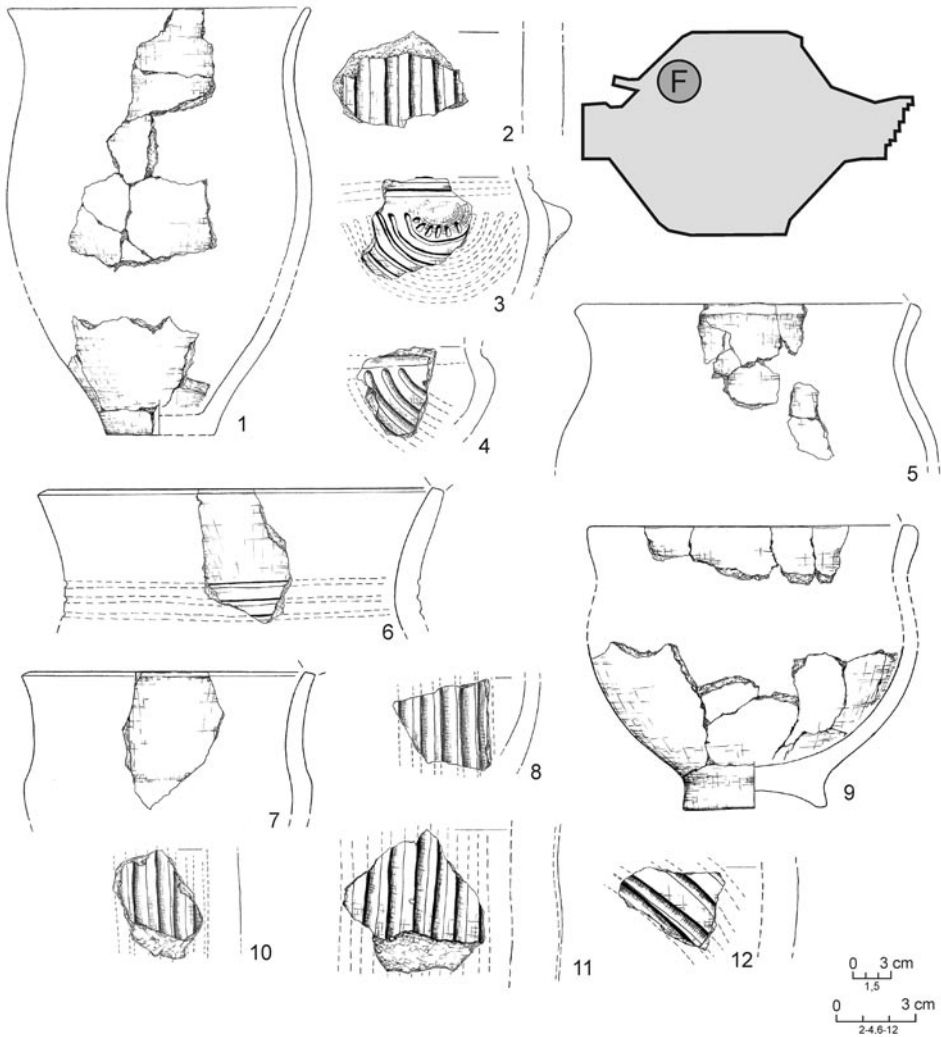
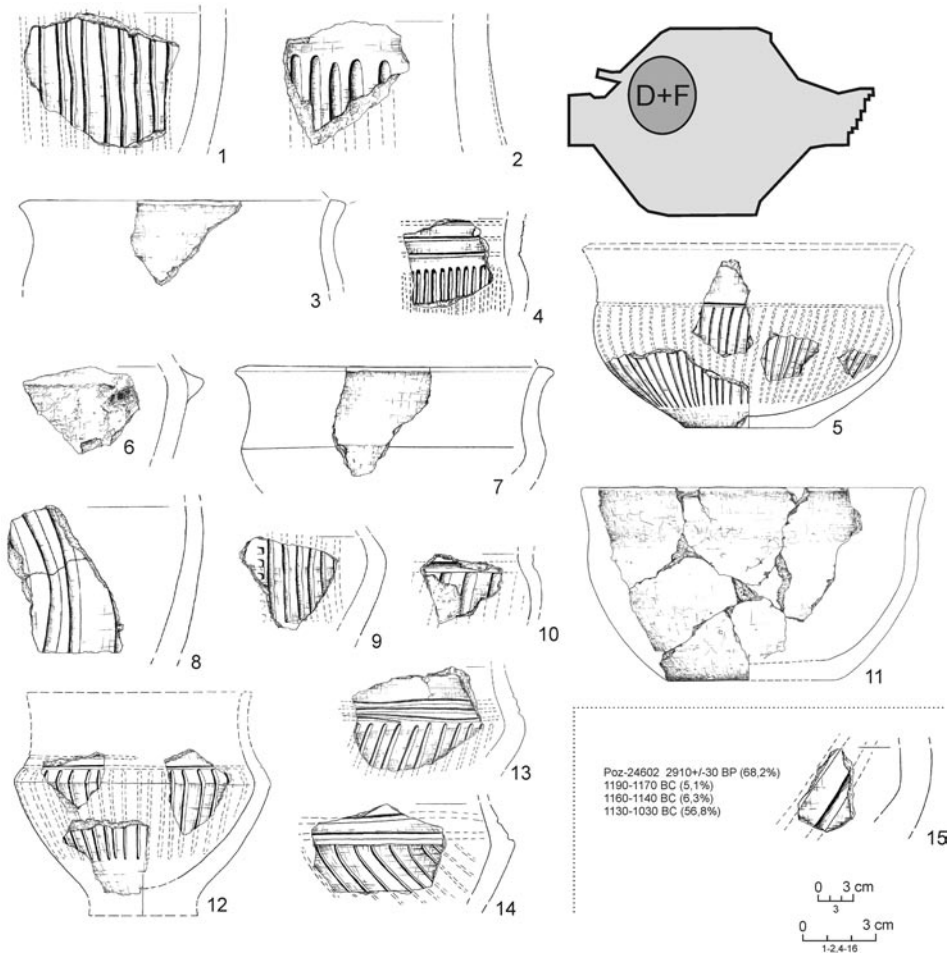


Fig. 13. Polesie, site 1, com. Łyszkowice, Łódź voivodeship. Settlement Zone F — the selection of the Trzciniec cultural circle pottery

graves coming from the sepulchral zone II probably appeared at that time. The radiocarbon dates indicate their use in the seventeenth and sixteenth centuries BC.

The analyzed settlement system, consisting of three settlements existing at the same time but clearly separated from each other and the common cemetery, was very stable and it existed for at least 150 years (the seventeenth and sixteenth century BC). In light of radiocarbon dating the situation changed around the middle of the second Millennium BC





**Fig. 14.** Polesie, site 1, com. Łyszkowice, Łódź voivodeship. Settlement Zone D + F — the selection of the Trzciniec cultural circle pottery within the radiocarbon determination of the pottery sherds belonging to the layer of trench M32b (15)

(Fig. 21). With regards to the collective inhumation burial L1182b (funerary zone III), which was situated at the earlier settlement A, the first of the dead were buried. The dead were interred on the most elevated point of the site, and after the grave's use, it was covered with an earthen mound. In the close proximity to the burial another cemetery (funerary zone IV) was created. A comparison of the large series of radiocarbon dates from cremation cemetery I and the collective burial shows that these two funerary areas (and another — IV, surrounding the collective burial) were at one stage contemporary. The change in purpose in respect to the central part of the site was synonymous with the need to transfer

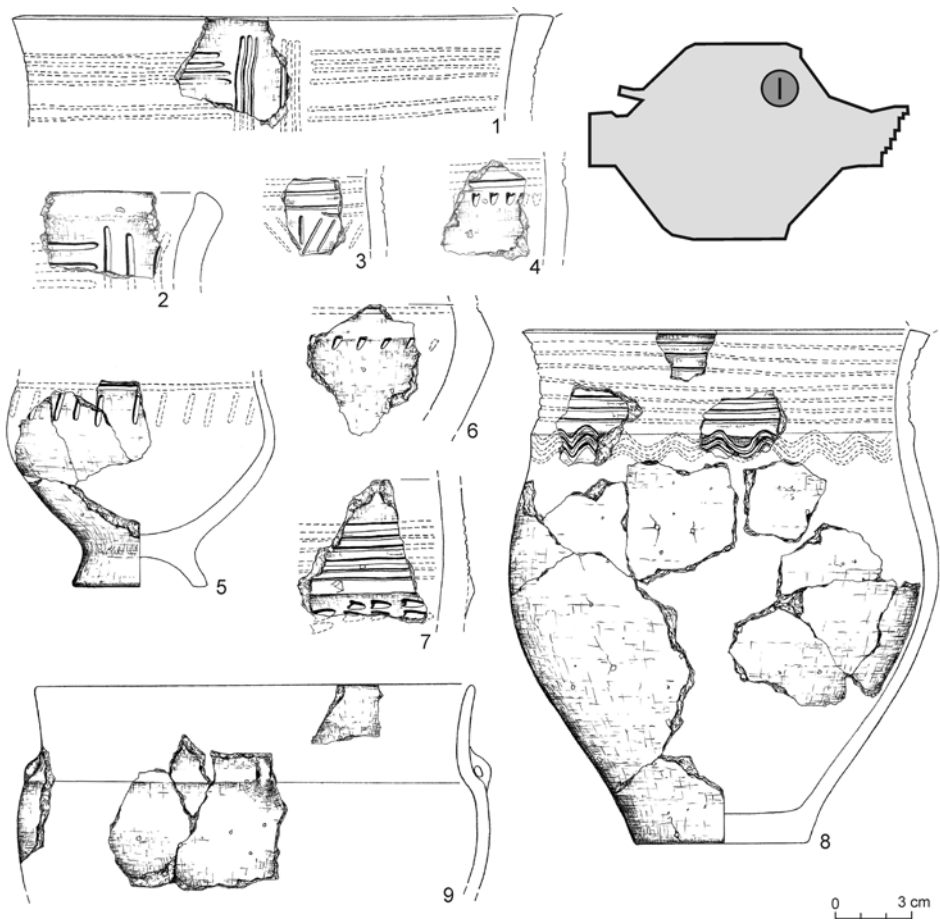
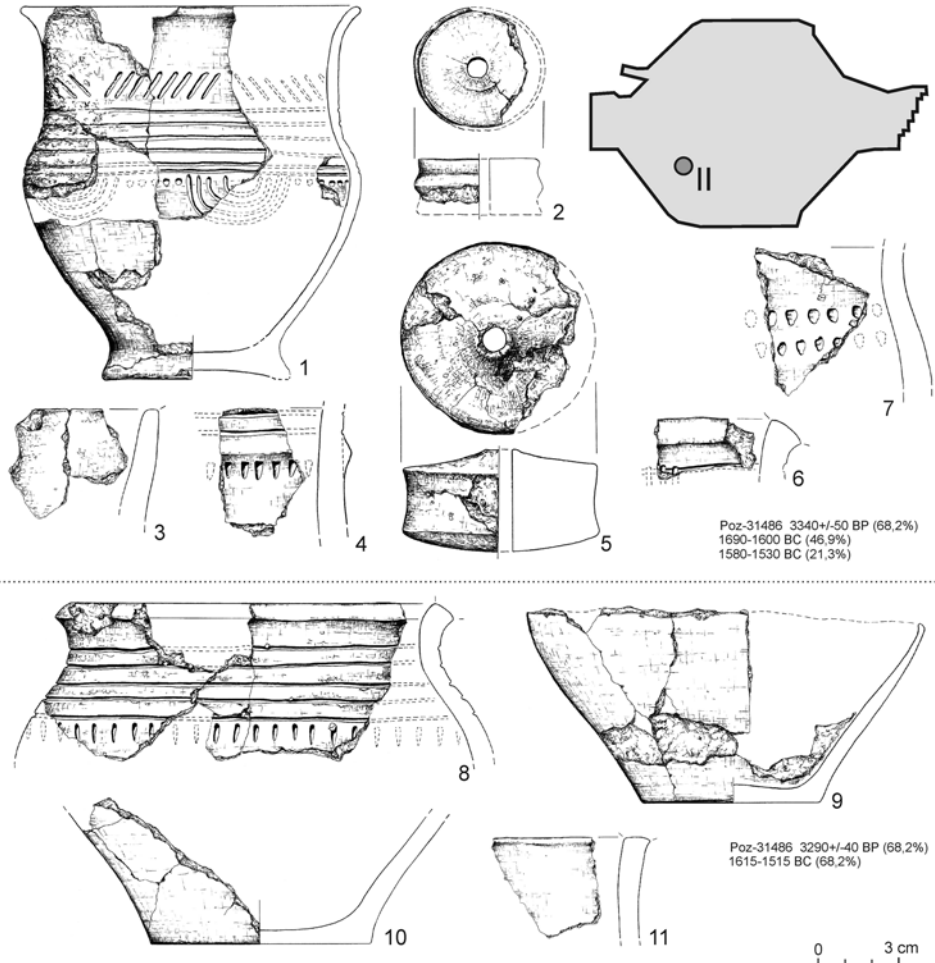


Fig. 15. Polesie, site 1, com. Łyszkowice, Łódź voivodeship. Sepulchral Zone I — the selection of the Trzciniec cultural circle pottery

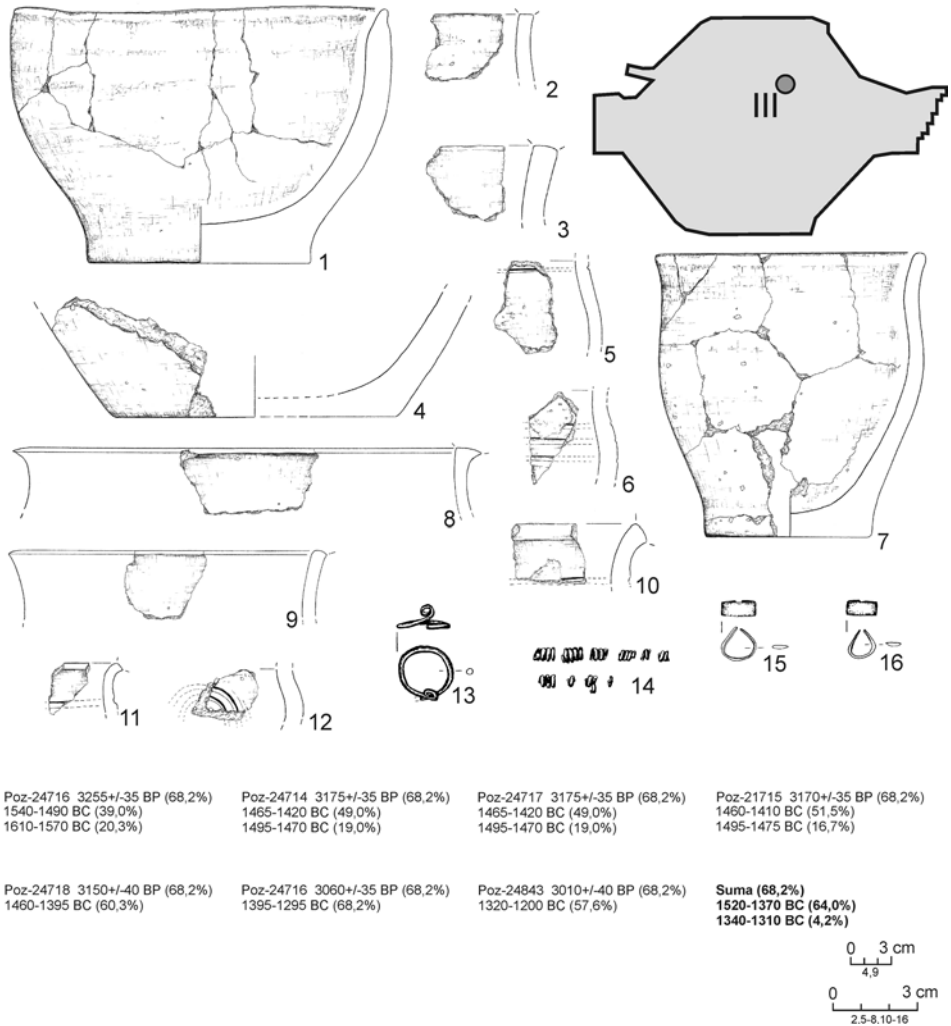
settlement A, which had functioned here before. This situation correlates with the records of the first traces of settlement in the western part of the site (settlement D). The radiocarbon date obtained for the materials from this area indicates that the beginning of its use might be related even to the middle of the sixteenth century BC, which is shown by the oldest designation of bones found in the newly formed collective burial in the centre of the site (Fig. 20, 21). A clear concentration of diagnostic features regarding the ceramics defines the range of settlement, while the older settlement C was defined by the scattering of characteristic pottery sherds. This may indicate a change in the organization (including intensification?) considering the settlement in the western part of the site. It also seems



**Fig. 16.** Polesie, site 1, com. Łyszkowice, Łódź voivodeship. Sepulchral Zone II — the selection of the Trzciniec cultural circle pottery within the radiocarbon determination of the cremation graves F1249 (1–7) and F1248 (8–11)

that in the fifteenth century BC there were two settlements (B and D) and two cemeteries (I and III + IV) at the site. The dwelling-economic parts B and D were spaced about 400 meters apart. The developed settlement structure was subordinated to the new burial and ritual space (zone III and IV). In addition to the collective burial, the researchers have noted that there were a few partially destroyed graves and deposits consisting of clusters of ceramics.

Further spatial development of the discussed settlement complex can be observed through the dispersion of features in the next stylistic group (SG 3 – Polesie type”). We



**Fig. 17.** Polesie, site 1, com. Łyszkowice, Łódź voivodeship. Sepulchral Zone III — the selection of pottery and bronze artefacts of the Trzciniec cultural circle from the collective burial L1182b within the radiocarbon determination

can notice a clear spatial expansion of the style associated with the creation of new settlement structures. The dispersion of characteristic decorative patterns may indicate the creation of a new economic-settlement zone (settlement E) in the northern part of the site. However, it is possible that the pottery sherds found there are the remains of grave goods belonging to cremation cemetery I. Its use in the fourteenth century BC is evidenced by radiocarbon dates obtained from burned human bones. The gradual colonization of the

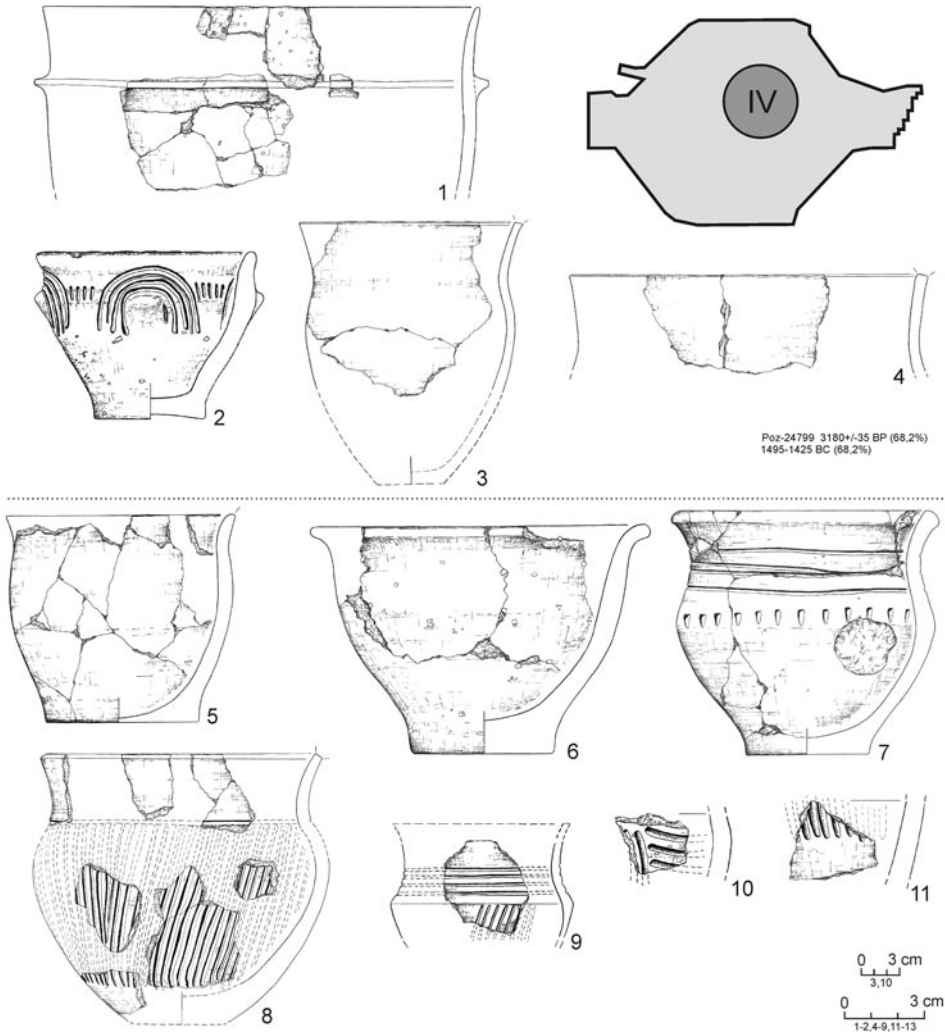


Fig. 18. Polesie, site 1, com. Łyszkowice, Łódź voivodeship. Sepulchral Zone IV — the selection of the Trzciniec cultural circle pottery within the radiocarbon determination of the grave Ł150 (1–4)

discussed part of the site may also have been possible, which resulted in the loss of use of the necropolis during the presented period. It seems highly plausible. It is also necessary to note the settlement activity in the north-western part of the site where settlement F has been distinguished. The "Polesie type" materials are also known from settlements B and D. Considering the former, they do not appear very frequently. It proves the continuity of the settlement in the eastern part of the site. The picture outlined above shows that in the



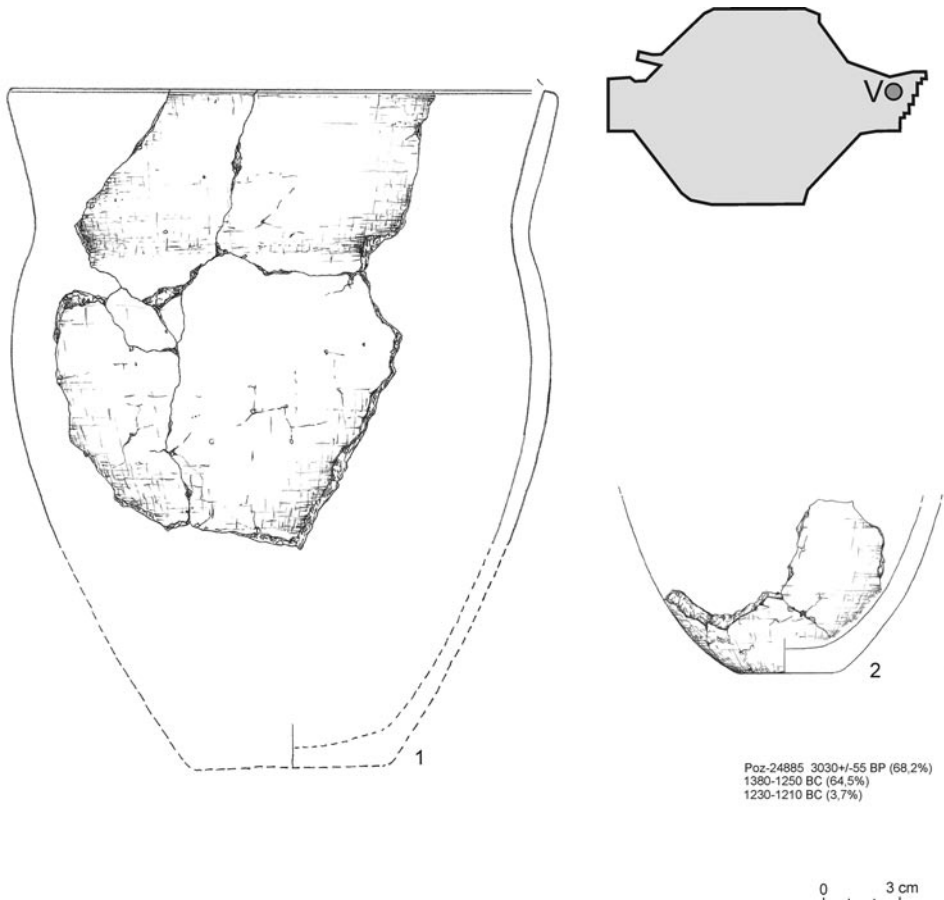


Fig. 19. Polesie, site 1, com. Łyszkowice, Łódź voivodeship. Sepulchral Zone IV — the selection of the Trzciniec cultural circle pottery coming from cremation grave I87 within the radiocarbon determination

fourteenth century BC significant changes took place in the structure of the settlement complex in Polesie. Three or four settlements at the time (B, D, F, and perhaps E) were arranged around the central sepulchral zone (III + IV). It was also probably the time when the burial associated with zone B (Fig. 21) occurred.

Research of the spatial distribution with regard to the specific features related to the later stages of development (SG 4 and SG 5 — vessels decorated with different vertical grooves) indicates a reduction in the spread of the studied patterns, particularly SG 4a and SG 4b. However, radiocarbon dates show that all the settlements clustered around the central sepulchral-ritual zone were used — which was common to the entire population. At that time, the collective burial had already been covered by the mound. It seems that the

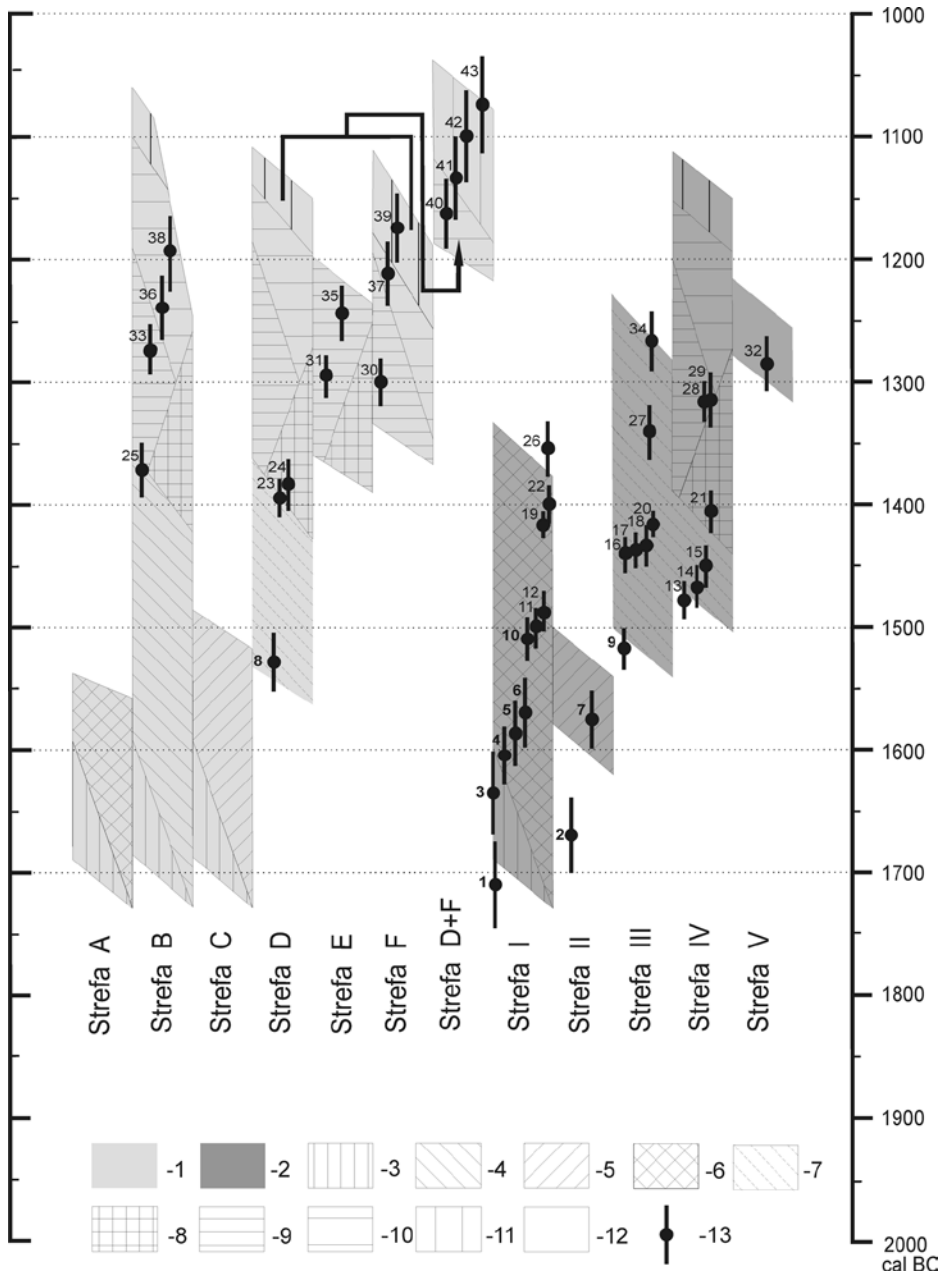
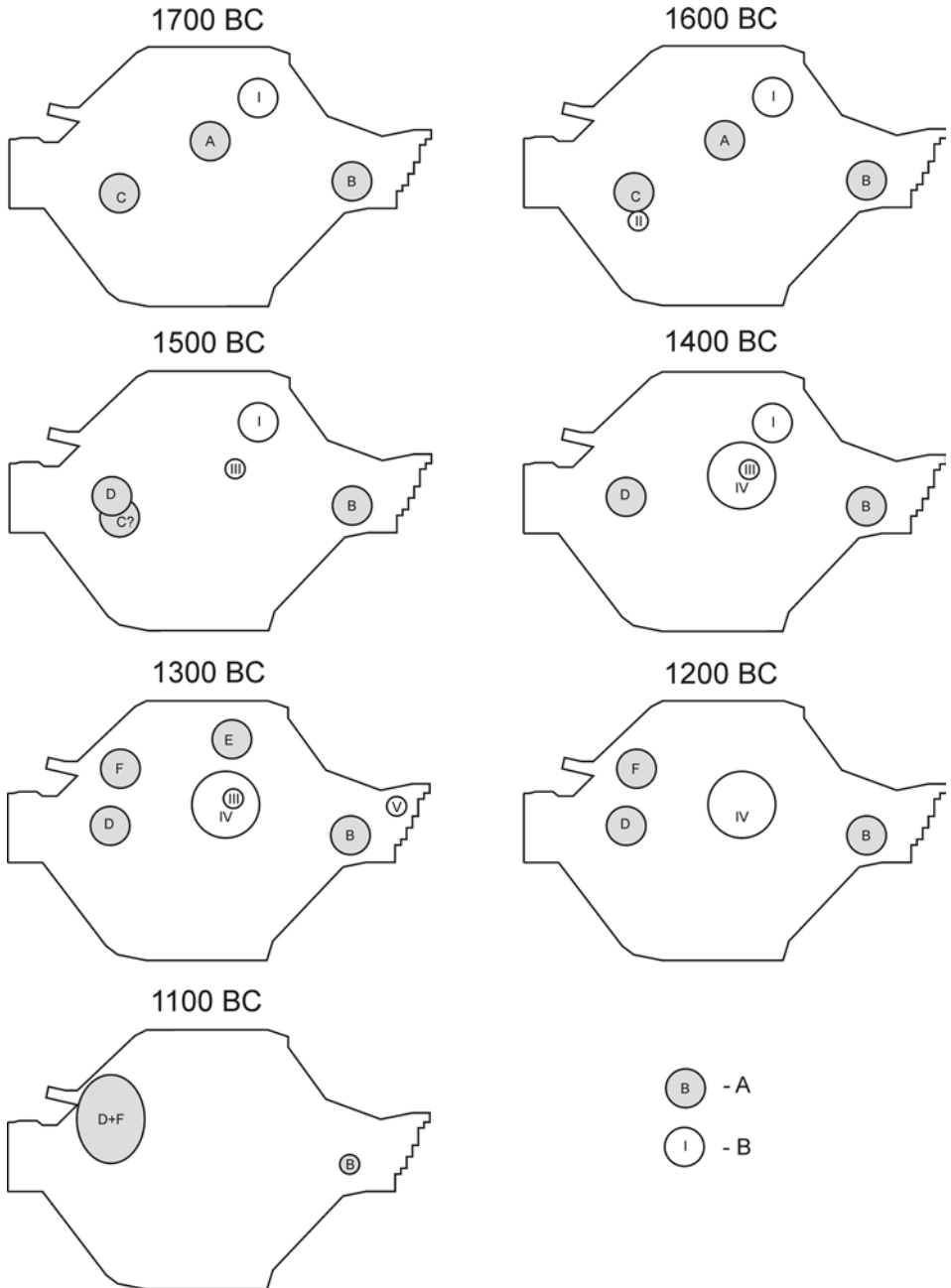


Fig. 20. Polesie, site 1, com. Łyszkowice, Łódź voivodeship. The scheme presenting the development of the Trzciniec settlement complex: settlement zones (1); sepulchral zone (2); materials SG 1 (3); SG 2a (4); SG 2b (5); SG 2a +2b (6); SG 2 undefined (7); SG 3 — „Polesie type” (8); SG 4a (9); SG 4b (10); SG 5 (11); undefined (12); an indication of the range of <sup>14</sup>C dating (13) (according to Górski *et al.* 2011)



**Fig. 21.** Polesie, site 1, com. Łyszkowice, Łódź voivodeship. The scheme presenting the model of the mechanics ruling the changes of spatial occupation of the site, based on the planigraphic analysis: settlement zone (1) sepulchral zone (2) (according to Górski *et al.* 2011)

central place of the monument, located at the highest point of the site was the most important (in terms of physical and symbolic meaning) region of the site, therefore, settled space was arranged accordingly. Zones with the greatest activity, measured by the number of pottery (here interpreted as settlements), are located about 200 meters from the centre. This distance separates the ritual area with the barrow from settlements B, D and F. At a closer proximity, about 100 meters away, lies settlement E (Fig. 21).

The twelfth century period sees a reduction of settlement activity at the site. Settlement E vanished in this period, which is confirmed by the absence in this area of late radiocarbon determinations and the lack of vessels decorated with wide vertical grooves (SG 4b) (Fig. 20). Thus, it became the least durable settlement episode. It is most likely, that the settlement activity in zone B also dropped – a lower amount of vessels decorated with vertical grooves occupied the lower surface. Changes can also be observed in the north-western part of the site. In light of the observed parameter (wide vertical grooves – SG 4b) the distinguished settlement zones D and F reduced their ranges to the north and south and the boundary between them became blurred. In light of the presented interpretation it can be said that the two settlements merged into one unit (settlement D + F), which also “expanded” spatially to the east. Its surface can be estimated at more than 1 ha. The new settlement was more than twice the size of the settlements that had previously existed there. According to this interpretation, as for the final phase of the TCC settlement in Polesie, we would have dealt with the consolidation of the settlement at the site (Fig. 21).

The settlement decline is associated with zones B and D + F. The former was a place of intensive economic-settlement activity occurring since the beginning of the settlement of this site by the TCC community. The second one is clearly the younger element of the discussed settlement structure. The youngest settlement systems are identified on the basis of the stylistic group 5 (SG 5) – vessels with sharply shaped bodies and decorated with incised vertical lines (Fig. 20).

### III. THE POLESIE SETTLEMENT COMPLEX AND LOWLAND MODEL OF “TRZCINIEC” SETTLEMENT

Due to the extensive damage of the surface of the site we do not have accurate information which may let us interpret the distinguished spatial sets in detail. Spatial clusters of ceramics probably reflect the zones of activity related to the place of dwelling. Perhaps there were a few enclosures functioning at the same time within the particular settlement zones. They were kinds of “hamlets” (settlement zones A–F), which together with cemeteries formed a long-term settlement micro-region, developing continuously for a few hundred years. What is interesting was the change of the “hamlet” settlement model in the late phase into the larger spatial unit in the western part of the site. It also seems that the concentrations of pottery interpreted as the settlement zones D, E and F were generally

beyond the range of the earthen features. On the other hand, conclusions given were perhaps affected by the preservation of the site. However, it is intriguing that the zones deprived of features represent the youngest settlement phases.

Despite having an entire sequence of reliable radiocarbon dates and the use of developed typological-stylistic and planigraphic analyses, we are only approximately able to determine the size of the settlement and funeral zones. Due to damage to the site surface, it is impossible to reconstruct precisely the “inner” structure of particular functional units: the spatial layout, the number and type of dwellings, economic and sepulchral features. Particular settlement and sepulchral zones were being used for a long time, such as settlements B and D for about 600 years and 450 years, the cemeteries I, III and IV – for 300–400 years, the others – much shorter (50–150 years), but it was long enough to create the places, entrenched in the collective consciousness, of a specific purpose and essential elements of the local cultural landscape. On the grounds of the dispersion of diagnostic pottery features and – to a lesser extent – the distribution of earthen features, an approximate size of the settlements and cemeteries of the Polesie could be given. The area of the largest settlement does not exceed 1 ha (settlement zone A – 0.7–1 ha, settlement F – 0.6–0.7 ha, the combined settlements D and F – 1 ha). Others are smaller counting from 0.3 to 0.5 ha (B–E).

Taking into account the collection of all the remains of the settlement in Polesie, it should be noted that so far within the Trzciniec ecumene the researchers had not discovered such a vast complex before, consisting of a number of settlements and cemeteries, which were being developed continuously for about 600 years. In this context, it is worth considering whether “Polesie” agglomeration has more in common with the upland or lowland “Trzciniec” settlement model? In the literature it is often argued for greater stability, longevity and more significantly the range of sizes considering the Trzciniec settlements in the southern – upland enclave than in the northern part – the Polish Lowland (Czebreszuk 1996; Makarowicz 1998; 2010; Górski *et al.* 2004). This observation, supported by many studies and examples, is undoubtedly true. Generally speaking, the upland area is covered with fertile soils which are efficient to conduct the productive agricultural economy, which implied the stable nature of individual settlements and the whole settlement system. Whereas, a poor habitat located in sandy lowland zones forced the people to conduct farming variously and to the greater mobility of the settlement (Górski *et al.* 2004). However, in light of recent discoveries, the above argument is not stated so categorically and the overall picture has become more complicated (Górski Makarowicz in press).

Researchers have not discovered settlements of the size of the Polesie complex, within the upland area, yet. The most reliable information comes from the territories near Kraków. With regard to this region, the surface of multi-phase settlements is estimated on the basis of reliable observations at 3.5–4.5 ha (Górski 1999). What is more, only the mentioned area of the TCC (with all settlements researched on a large scale) has provided materials from all chronological phases. On this basis, it can be assumed that the standard, stable

settlement on the loess of western Lesser Poland existed throughout the whole duration of the TCC. The most fully recognized settlement in the upland area is the numerously discussed settlement in Kraków-Nowa Huta-Mogiła, site 55 (Wanda Mound). The researchers have distinguished eight phases of construction (including seven ones with a clear “Trzciniec” affiliation). The length of the discussed stages has been estimated at 60–80 years. Each of them contained from 10 to 15 enclosures, and the number of people at the same time could amount to 60–100 people (Górski 1994; 1997; Kadrow, Górski 2003). During the five-hundred-year plus development period, the location and size of the following settlements underwent changes within the areas that were occupied directly, i.e. the enclosure areas where the dwelling and economic/utility facilities were. Particular phases of construction (the successive settlements) were mutually exclusive considering the space that was used by different parts of the site. The surface, which was occupied by the features in the course of a single construction phase ranged from 3000–35000 m<sup>2</sup> in phase I–IV to 8000 m<sup>2</sup> in phase VII and VIIa. If we estimate the hypothetical surface of the individual enclosures, the size of the settlement would fluctuate from 0.5 ha in the earlier phases to 1 ha in the youngest phase. The remains of the enclosures (the trapezoid features) were often assembled in the shape of an elliptical outline around a central unbuilt square (Górski 1994, 92–102, fig. 6–13).

Regarding the lowland territories, such long-lasting settlements as in the loess zone have yet to be recorded, and their surfaces were usually smaller. The largest settlements have been discovered in the valley of the central Warta River. The materials found are allotted to one stylistic phase and (often) one phase of construction. If two phases (horizons) of development have been registered such as the classical and late phase, only one of them was intense (Makarowicz 2010, 2013; Makarowicz *et al.* 2010). Although, some of these settlements occupied fairly large areas (up to two hectares), and the researches have sometimes uncovered more than 100 constructions, including dwelling buildings (e.g. Janowice, site 7/8, Krągola, site 6 or Roźniatów Kolonia, site 5), a small number of mobile sources suggests their function is associated to a maximum of one generation. The settlements from Kuyavia are even smaller. Here, a representative settlement complex has been discovered in Rybiny, in the Kuyavian Lakeland. It consisted of two small, probably single farms, the older one (Rybiny site 14) and younger one (Rybiny site 17) covering an area of 0.3–0.4 ha, distant from each other by a few hundred meters and accompanied by a narrow cemetery (completely destroyed), which originally consisted of six mounds (Makarowicz 1989; 2000). It can be assumed that the Rybiny agglomeration is also a settlement system, in which – as in Polesie – we are dealing with “hamlets” and a cemetery operating in the vicinity of them. However, the development of this complex was much shorter and concerned only the classical phase. The spatially small settlement constructions, probably reflected the more individual enclosures with an area of approximately 0.2 hectares, they seem to be characteristic of the Mazovia-Podlasie enclave of the TCC. An example of this can be seen in the remains discovered in Jeroniki in the Podlasie region (Wawrusiewicz 2013).



## SUMMARY

Summing up the results presented in this article, it should be noted that the settlement complex in Polesie is a new valuable source of information regarding the settlement activity of the Trzciniec circle recorded so far. It has no analogy in any regional enclaves of that cultural unit. The presented suggestion does not result from a particular role or site location within the framework of long-distance routes linking the analyzed agglomeration. It is more the result of research covering a large area of the site. It is possible that with the development of field research in the area between the middle Warta and Bzura, we may expect to discover more, far-reaching and long-lasting settlement complexes.

It is worth mentioning that the recorded continuity of the site occupation was noticeable for several hundred years which does not have analogies in the Polish Lowlands. Further study on this complex site will concentrate on the theoretical evaluation of the productivity of the environment and the ability to drive a certain type of economy, particularly in terms of the possible size of the population, which would have been active in the area. What is more, it will be important in this context to analyze the changes in the ecosystem as a result of the continuous activity of 25 generations regarding the local population.

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