

Mateusz Sosnowski¹, Agnieszka M. Noryskiewicz², Jerzy Czerniec³

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¹ Nicolaus Copernicus University in Toruń, Faculty of History, Institute of Archaeology, Szosa Bydgoska 44/48, 87-100 Toruń, Poland; e-mail: m_s85@doktorant.umk.pl; ORCID: 0000-0003-1495-1627

² Nicolaus Copernicus University in Toruń, Faculty of History, Institute of Archaeology, Szosa Bydgoska 44/48, 87-100 Toruń, Poland; ORCID: 0000-0002-9481-8684

³ The Institute of Archaeology and Ethnology, Polish Academy of Science, Al. Solidarności 105, 00-140 Warsaw, Poland; ORCID: 0000-0001-6247-8753

Examining a scallop shell-shaped plate from the Late Roman Period discovered in Osie (site no.: Osie 28, AZP 27-41/26), northern Poland

Abstract

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Research conducted using Airborne Laser Scanning methods in northern Poland allowed traces of a settlement from almost 2,000 years ago to be registered. The most valuable item found is a copper-alloy scallop shell-shaped plate which is still an unknown object in the cultural realities of the Roman Period in northern Poland. The results of pollen analysis of the material obtained during the cleaning of the found scallop shell-shaped plate indicate the dominance of herbaceous plants over the representation of trees in the vicinity of the archaeological site discussed. The advantage of synanthropic plants among herbaceous plants informs us about the open habitat communities formed as a result of human activity (fields, meadows, roads or ruderal areas).

Key words: Scallop shell-shaped plate, Roman Empire, Late Roman Period, Late Iron Age, pollen analysis

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Introduction

In recent years in Polish archaeology there has been significant progress in the application of measurement methods based on the Airborne Laser Scanning (ALS) method (Pawleta, Zapłata 2015, 9–29). They allow the separation of micro-structures that have survived from former human settlements and arable fields. Research using this method is particularly useful for areas that are currently covered with forest, which on the one hand is a natural preservative of such objects, and on the other hand hinders traditional surface prospecting. Research conducted using ALS methods in the Tuchola Forest, in one of the largest forest complexes in northern Poland, allowed traces of a settlement in such a wooded area from almost 2,000 years ago to be registered (Fig. 1).

In the course of archaeological surface and survey excavations conducted in 2017–2018, numerous artefacts chronologically associated with the Late Roman Period were discovered in the aforementioned area. One of the most valuable items retrieved is a copper-alloy scallop shell-shaped plate (Fig. 2 and Fig. 3). It is a significant find that introduces a new category of objects into the cultural space of the Late Roman Period for northern Poland, one which points to its connections with the Roman Empire. In order to obtain the natural background of the presented relic, pollen analysis was made for the material obtained from the surface of the plate during its conservation process.

The archaeological site is located in the eastern part of the Tuchola Forest complex, about 5 km north of the village of Osie, site no.: Osie 28 AZP 27-41/26 (geographical coordinates of the centre of the site: N 53°38'52"; E 18°22'07"). Nowadays, it is an area

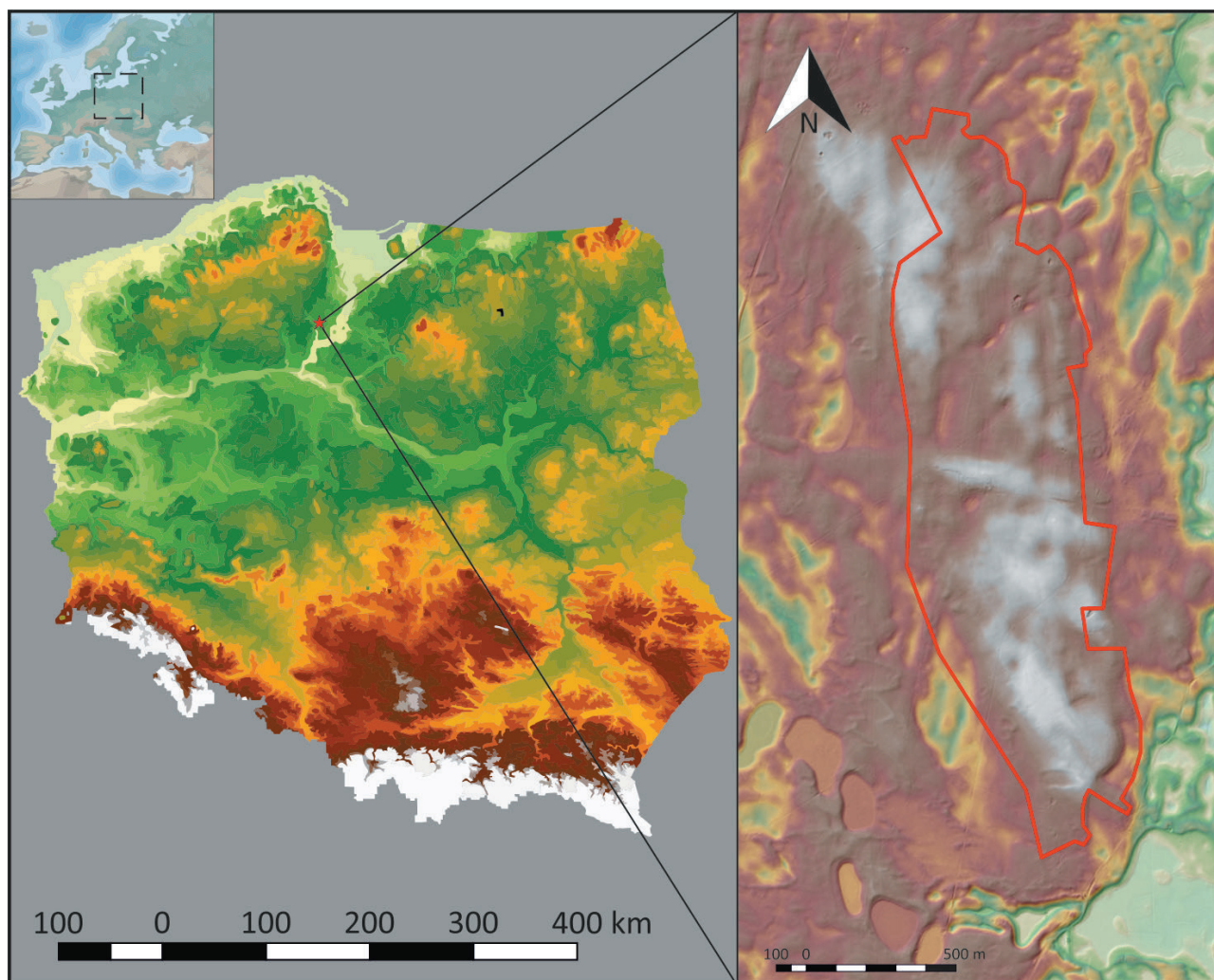


Fig. 1. Location of the site (map by M. Sosnowski & J. Czerniec).



Fig. 2. Photography of the scallop shell-shaped plate (photograph by W. Ochotny).

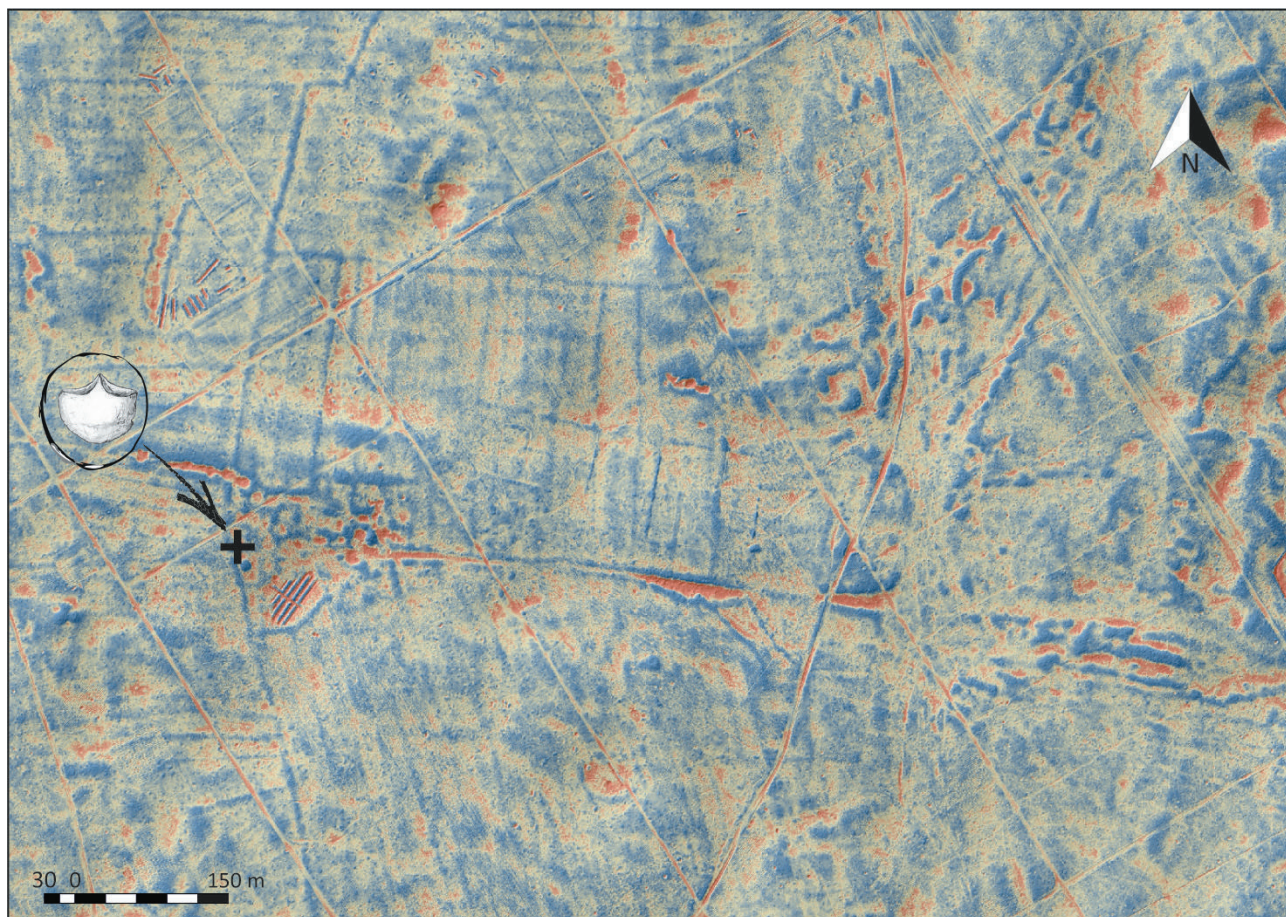


Fig. 3. Local Relief Model view of the discovered site with the place where the plate was found marked (map by J. Czerniec).

covered with pine and mixed forest, and in the northern part with oak-hornbeam forest with a service tree (*Sorbus torminalis*) present. Thanks to the application of the spatial analyses, an area of 170 hectares was delineated on which objects of anthropogenic origin were registered. Digital Terrain Model (DTM) analysis permitted us to observe objects, the structure of which could indicate the area in which the agricultural economy was likely to have been conducted (arable fields), as well as indicating the location of the probable human settlement (living space). In addition, the preserved communication system related to the functioning of this housing estate (road relics) has been shown. With the use of high resolution models, observations were made at 1:300 scale, which allowed the assessment of the state of preservation of field relics (Fig. 4). The boundaries of blocks of fields are visible in the depictions, including the division into *nivas*. The size of individual blocks varies from 12 to 20 ares. The width of the balk separating the blocks is 5-10 m. Such a spatial arrangement did not seem to be representative of the late medieval or modern human settlements that dominate in the immediate vicinity of the studied area. The

observed arrangement of fields rather seemed to match the spatial arrangements of fields registered in northern Europe in the area of the Jutland, the British Isles and the Netherlands and interpreted as so-called “Celtic Fields”, dated from the Early Bronze Age (c. 1800 BC) until the early medieval period – a term coined by O.G.S. Crawford (Crawford 1923, 350).

Material and methods

The function and chronology of a similar type of plate found in the area of the Roman Empire was very specific. Such objects in that cultural space occurred in a narrow time range, from mid 3rd century AD to the mid 4th century AD (Gschwind 1998, 115), and they functioned as a decorative part of a horse harness (Horvat, Trkaman 2016, 103). It gives the opportunity to pre-position the site from Tuchola Forest in a specific period before the absolute dating of the site is done. Based on the chronology of the item found, we can state that the settlement could have functioned from the middle of the 3rd century AD. Using the chronological clues regard-

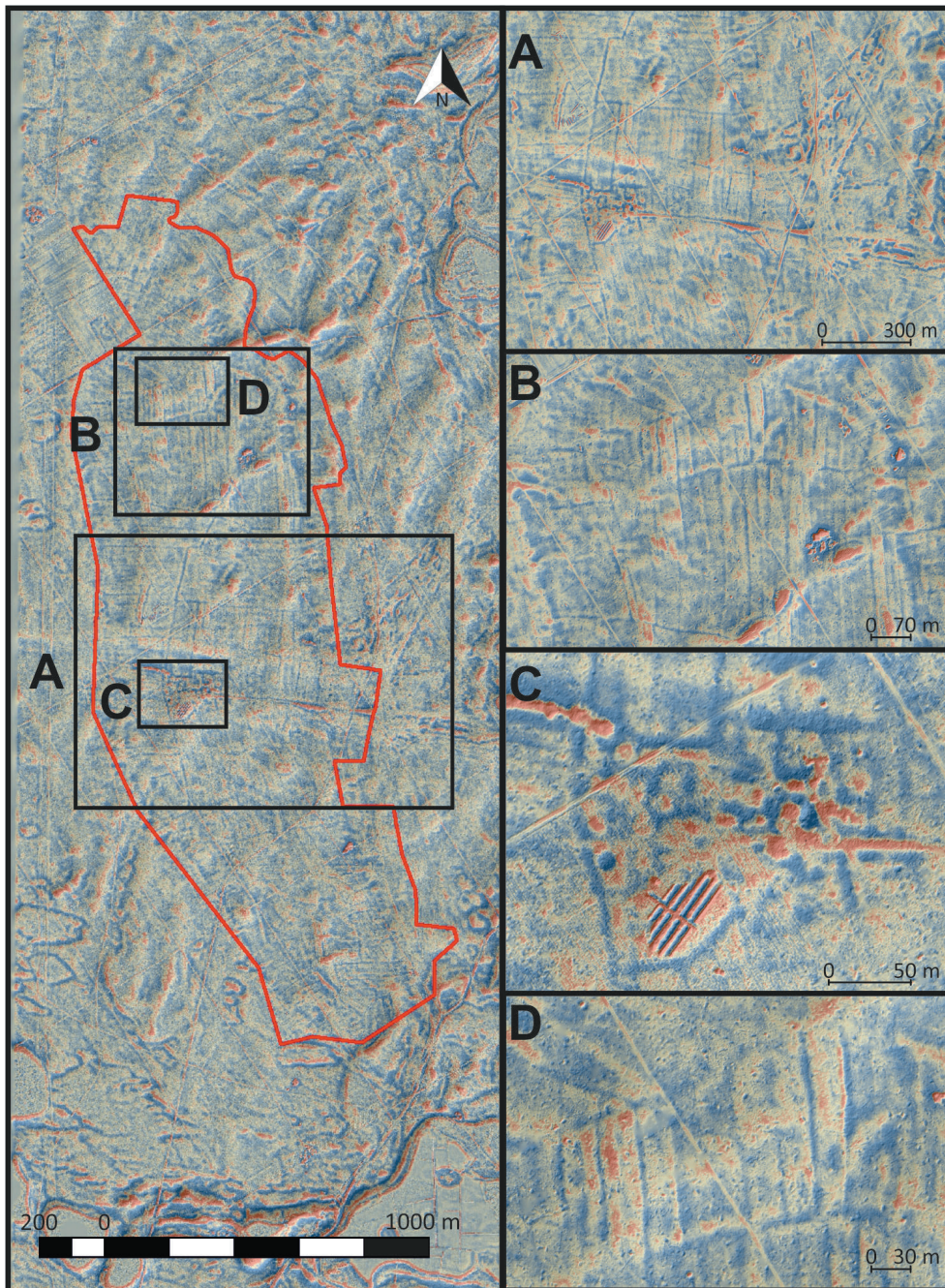


Fig. 4. Local Relief model of the site: A - spatial layout of the settlement; B - spatial layout of the field system; C - close look on the settlement (living space); D - close look on the single block of the field (map by J. Czerniec & M. Sosnowski).

ing the interval in which such artefacts occurred and using a historical source, we can link the chronology of this object to specific historical events and indicate one of the probable ways in which this item was imported into the area in which it was found. The Roman historian Zosimus gives information in his work “New History” about the conflict between Emperor Probus and the barbarian tribes that took place in the second half of the third century (Zosimus I:68). Zosimus mentions

the Burgundian and Vandal tribes who allegedly went on a war expedition against the Empire. On the basis of archaeological knowledge and written sources from the Roman Empire, those Germanic tribes can be associated with the area of central Poland (Kokowski 2004, 25-86), which neighbours the cultural space where the site from Tuchola Forest was located.

The conducted pollen analysis concerned the examination of material originating from the cleaning of

the plate's surface during preservation. Due to the nature of sediment fossilization, the most important task was to check if micro-plant remains were preserved on it. They could indicate the function of the object or the nature of the cultural landscape during its deposit. For the whole material obtained, a preparation typical for pollen analysis was used (Berglund, Ralska-Jasiewiczowa 1986, 455–484). At the stage of treating the material with 10% HCl, the sample turned blue, which clearly evidenced the presence of copper oxide and provided valuable information about the material the plate was made of. Pollen and spore identification followed Beug (2004), and The Northwest European Pollen Flora I–VIII (Punt *et al.*, 1976–2003).

Results

In the context of analogous objects from the areas of the Roman Empire, the plate found in the Tuchola Forest, in terms of shape and measurements, perfectly matches objects of this type found in Western Europe and the Balkans (Gschwind 1998, 116; Horvat, Trkaman 2016, 102). It should be noted that from the areas of the Roman Empire we know plates of this type appeared in two sizes, those smaller, size 19×19 mm and larger, with dimensions exactly like the item from northern Poland (45×50 mm) presented in the article.

Palynological analysis at archaeological sites encounters certain limitations. Most often, we have available materials of anthropogenic origin or formed in the conditions of direct settlement, instead of natural organic sedimentation. Pollen preserved on the tag was in a relatively good condition and attendance. 431 grains of the sum of AP (*arboreal pollen*) + NAP (*non arboreal pollen*) on two slides were counted. At the stage of treating the material with 10% HCl, the sample turned blue, which clearly evidenced the presence of copper oxide and provided valuable information about the material the plate was made of. Only a small percentage of pollen was included in the indeterminate group due to the blurring of diagnostic features (Fig. 5).

The results of the pollen analysis were presented in a cyclogram containing the percentage of pollen (Fig. 6). Herbaceous plants (NAP) dominate in the sample (69.4%). The share of trees and shrubs (AP) is small and reaches 30.6%. Pine (*Pinus* 15.5%) predominates, but there are also: birch (*Betula* 2.3%), alder (*Alnus* 1.2%), hornbeam (*Carpinus* 0.7%), oak (*Quercus* 0.5%), elm (*Ulmus* 0.2%), spruce (*Picea* 0.2%) and hazel (*Corylus* 0.5%).

Discussion

This kind of artefact is well known and widely developed in the scientific discourse on the territory of the Roman Empire, but it is still an unknown object in the cultural realities of the Roman Period in the area of present-day northern Poland, where probably one of the ways of its import into this area can be presented in the text hypothesis that objects of this type could have come here as war loot.

Pollen analysis shows a very good preservation of pollen. The low share of trees (less than 30%) indicates the open space of the landscape. The presence of the alder should be associated with the occurrence of wetland or marshy communities. The general palynological record reveals the presence of a cultural landscape characterized by the appearance of synanthropic plants which find conditions favourable for development present in the area influenced by human groups. The indicator for arable fields is cereals (Cerealia type, Fig. 5D and rye *Secale cereale*, Fig. 5E) and for meadows and pastures are, for example, ribwort plantain (*Plantago lanceolata*, Fig. 5A), grass (Poaceae 30.4%, Fig. 5C) and plants from the astroids subfamily (Asteroideae). The numerous occurrence of mugworts (*Artemisia*, Fig. 5B) and grass (Poaceae) pollen is evidence of the presence of ruderal habitats characteristic of communication routes or human residences.

Until now, as a result of the author's own experience of analysing material obtained from cleaning bronze tools (Noryśkiewicz 2016), a blue colour was not obtained during maceration. The colour change proves the presence of copper oxide which raises a question of what material was used to produce the item. Was it bronze of better quality with a higher copper content or perhaps even pure copper? The chemical analysis may help to determine this fact but it might also be the reason for the good preservation of pollen.

Conclusions

By juxtaposing knowledge from archaeological research, both from the area of the Roman Empire (findings of shell-shaped plates) and those from contemporary Poland (Fig. 7) (linking archaeological cultures with Germanic tribes and the described plate), with information from historical sources (information about the location of Germanic tribes and the record of the war expedition from the 3rd century) we can hypothesize that one of the possible reasons for the appearance

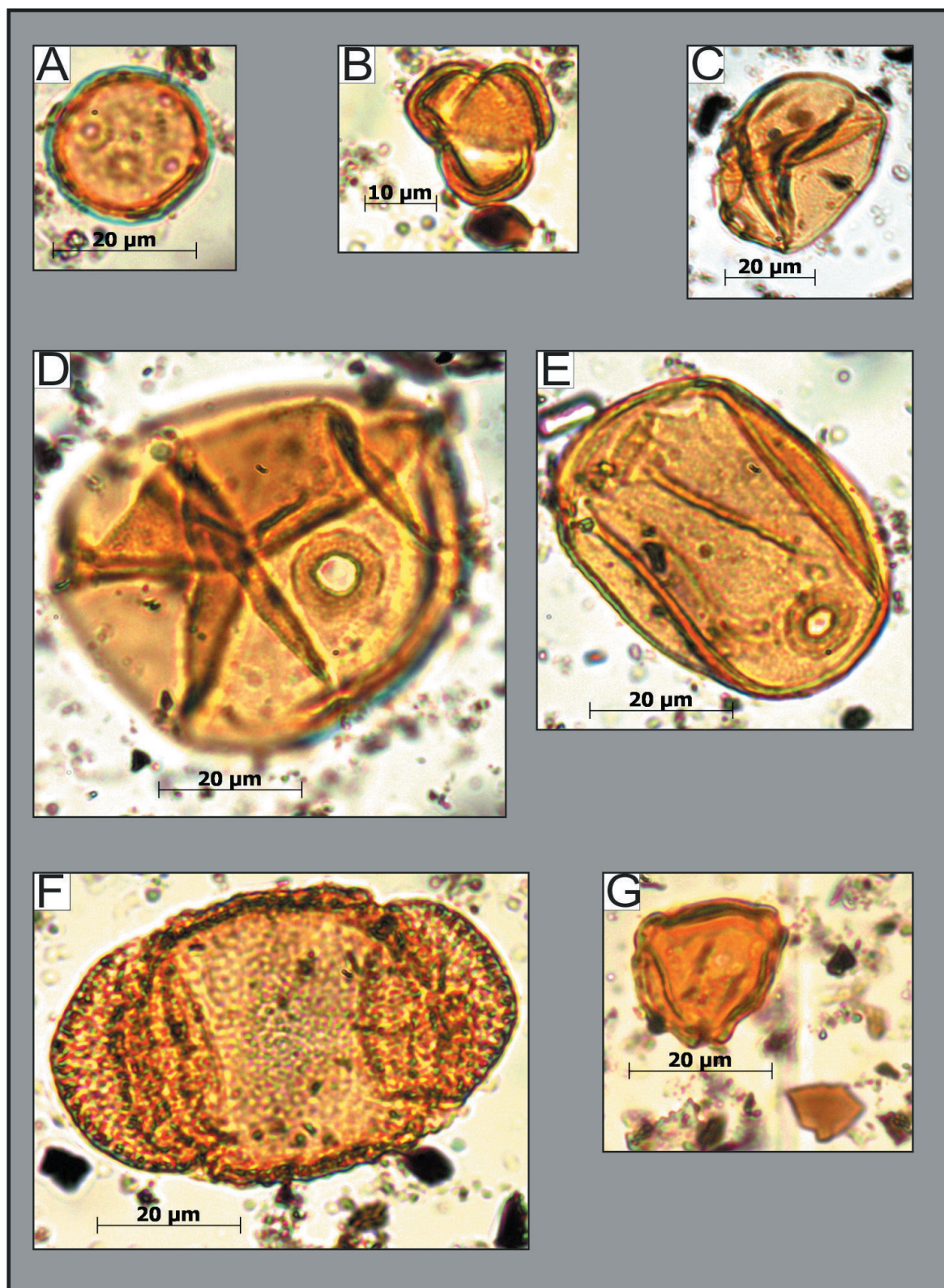


Fig. 5. Pollen grains of selected taxa: **A** – *Plantago lanceolata*, **B** – *Artemisia*, **C** – Poaceae, **D** – Cerealia type, **E** – *Secale cereale*, **F** – *Pinus sylvestris*, **G** – *Betula* (photograph by A. M. Noryśkiewicz).

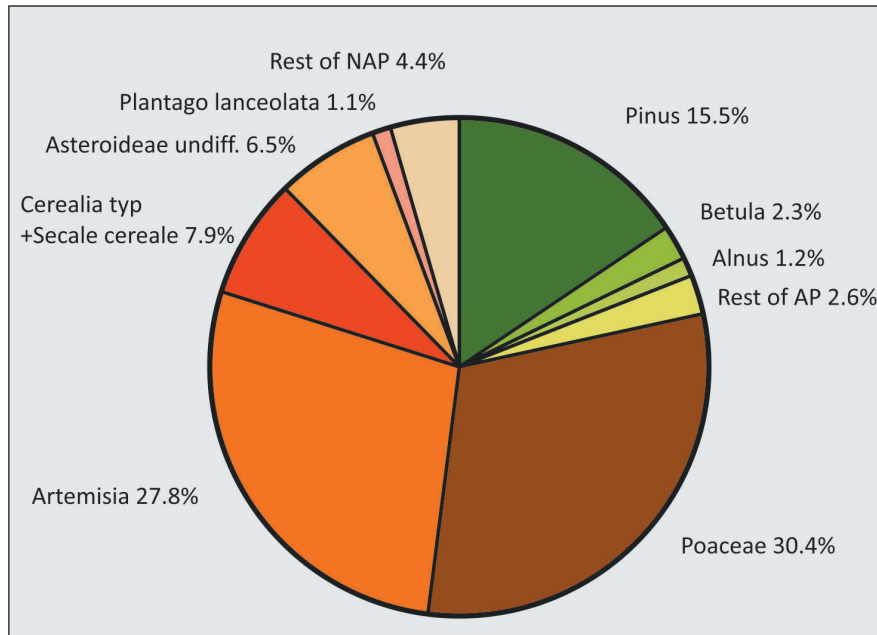


Fig. 6. Pollen percentage cyclogram (made by A. M. Noryśkiewicz).

of this object in the cultural space of Tuchola Forest in the late Roman period was as war loot.

The palynological record of the test sample undoubtedly reveals the presence of the cultural landscape during the deposit of the object. It should be noted, however, that in the mineral material part of the pollen became corrosive due to the conditions of fossilization and was therefore indeterminable and not included in the calculation sum AP+NAP. Thus, the percentages are not completely accurate but this does not change the interpretation. The presence of fields, meadows, pastures and ruderal areas is certain, even if the estimation of their size requires further research.

As we know from the similar findings in the area of the Roman Empire, this scallop shell-shaped plate might have functioned as a decorative part of a horse harness (Fig. 8). Finding this item in Tuchola Forest is a valuable discovery not only on a local scale. It is an important component of the interregional contacts of communities living in areas far from the borders of the Roman Empire. This is another element showing us the dynamics of processes (contacts between regions), which took place at the beginning of our era in this part of Europe, which only seemingly seems to be a peripheral area in relation to areas lying over the borders of the Roman Empire or the Empire itself.



Fig. 7. Drawing of the scallop shell-shaped plate found in the Tuchola Forest (drawing by W. Sosnowski).



Fig. 8. Placement reconstruction of the plate on the horse harness (drawing by O. Rutkiewicz).

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