

TOPICAL REVIEW – TEMATICKÁ SYNTÉZA

**State of research on early medieval strongholds
in Western Greater Poland**

Stav výzkumu raně středověkých hradišť v západním Velkopolsku

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The study reviews the current state of research on early medieval strongholds in Western Greater Poland, a region in which roughly 30 such sites are known. Built in the older phases of the Early Middle Ages, they precede the formation of the state of the first Piasts, which took place from the second half of the 10th century. The strongholds display considerable diversity in terms of physical features and probably also in their chronology and function. The northwestern part of Greater Poland, however, has been studied to a limited and rather selective degree. The preliminary analysis of local strongholds presented in this paper indicates significant research potential, particularly given their good state of preservation. Key questions concern the chronological variability of the sites, their functions, and the role they played within micro-regional settlement networks. Ultimately, these investigations may shed light on the social and political dynamics underlying the origin, functioning, and decline of the strongholds.

strongholds – Early Middle Ages – Greater Poland – pre-state period – tribal period – Tornow-Klenica

Tato studie přináší přehled současného stavu výzkumu raně středověkých hradišť v západním Velkopolsku. V této oblasti je známo asi 30 takových lokalit. Byly postaveny ve starších fázích raného středověku a předchází tak vznik státu prvních Piastovců, k němuž došlo v druhé polovině 10. století. Hradiště se vyznačují značnou rozmanitostí, pokud jde o jejich fyzické atributy a pravděpodobně také chronologii i funkci. Severozápadní část Velkopolska však byla studována pouze v omezené míře a spíše selektivně. Předběžná analýza místních hradišť prezentovaná v tomto článku naznačuje významný výzkumný potenciál, zejména vzhledem k jejich dobrému stavu zachování. Klíčové otázky se týkají chronologické variability lokalit, jejich funkcí a role, kterou hrály v mikroregionálních sídelních sítích. Tyto výzkumy mohou nakonec osvětlit sociální a politickou dynamiku, která stála za vznikem, fungováním a úpadkem hradišť.

hradiště – raný středověk – Velkopolsko – předstátní období – kmenové období – Tornow-Klenica

Introduction

The territory of Western Greater Poland, where the fortified settlements described in this article are located, is bounded by the Warta River to the north and east, and the Odra River to the west and south. Through its centre run smaller tributaries: the Sama, the Samica, the Mogilnica, the Ostroroga, the Wiryńka, the Czarna Woda, and the Kamionka rivers, which outlined movement arteries in the Early Middle Ages facilitating the flow of ideas, people, and products of material culture (Pawlak 2021, 115). During phase B (c. 600/650–850/900 AD), C (c. 850/900–950 AD), and D₀ (c. 900–950/960 AD) of the Polish chronology of the Early Middle Ages (after Dzieduszycki 1990), numerous fortified settlements were built in this area, varying in terms of the morphology of the terrain on which they were erected, as well as in their dimensions, the fortification construction

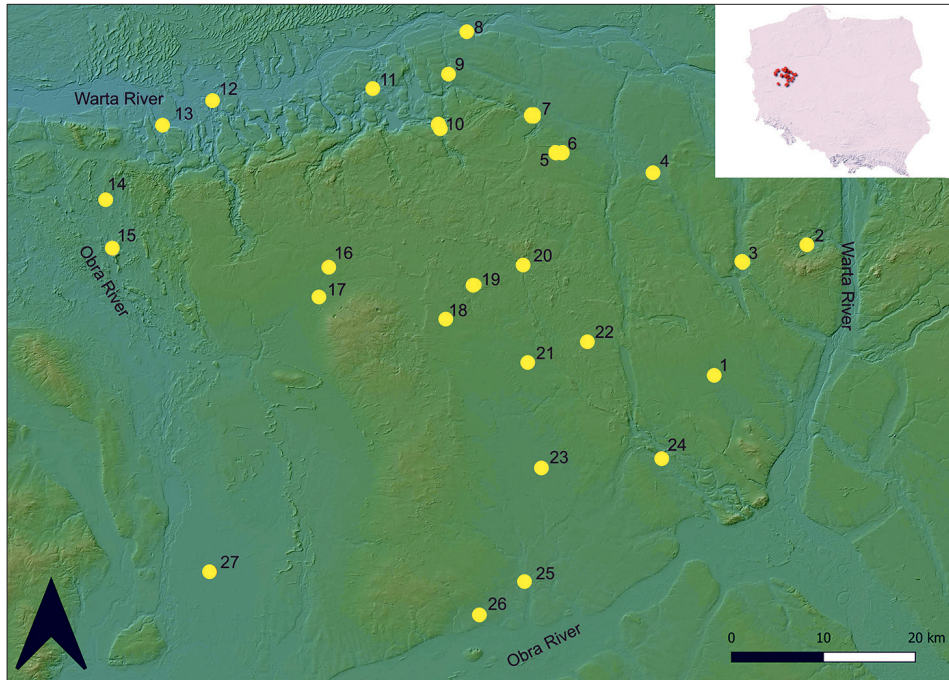


Fig. 1. Location of strongholds from the earlier phases of the Early Middle Ages in Western Greater Poland. 1 – Dąbrówka; 2 – Glinno; 3 – Pawłowice; 4 – Kaśinowo-Baborówko; 5 – Rudki; 6 – Jastrowo-Ostrolesie; 7 – Ostroróg; 8 – Pierwoszewo; 9 – Wróblewo; 10 – Nojewo; 11 – Ryżyn; 12 – Aleksandrowo; 13 – Muchocin; 14 – Pszczew; 15 – Pszczew, Katherine Peninsul; 16 – Linie-Wymysłanka; 17 – Grońsko-Komorowo; 18 – Bródki; 19 – Niewierz, dis. Szamotuły; 20 – Wilczyna-Młynkowo, dis. Szamotuły; 21 – Sędzinko-Zalesie; 22 – Brzoza; 23 – Dakowy Mokre; 24 – Nowa Wieś-Krąplewo; 25 – Kamieniec; 26 – Trzcinica; 27 – Karna (data from geoportal.gov.pl, based on Pawlak 2021; Michalski et al. 2016)

techniques and, finally, the very way in which they were used. It can be said with a high degree of certainty that they are also differentiated by the presumed reasons for their downfall. Both chronological and geographical aspects were of great importance. They determined the development and affiliation to specific communities in the pre-state period (until the end of the first half of the 10th century),¹ and then their position within the newly forming Piast state (from the second half of the 10th century). In total, Western Greater Poland has 27 fortified settlements dating to the older phases of the Early Middle Ages and several sites that are known only from archival records, but their chronology or stronghold character are sufficiently established (*Fig. 1; Tab. 1*).

This text aims to describe the history of research at the fortified settlements located in Western Greater Poland. It focuses on excavations carried out to date along with inventories and other results obtained during these campaigns. The text is supplemented by a dataset

¹ The tribal period in Poland is defined as the earlier phases of the Early Middle Ages. The twilight of the tribal period in Greater Poland was associated with the formation of the Piast state.

Number on the map	Name of site	Chronology (phase)
1	Dąbrówka, dis. Poznań	B/C
2	Glinno, dis. Poznań	
3	Pawłowice, dis. Poznań	C
4	Kąsinowo-Baborówko, dis. Szamotuły	B/C
5	Rudki, dis. Szamotuły	B/C
6	Jastrowo-Ostrolesie, dis. Szamotuły	C
7	Ostroróg, dis. Szamotuły	C
8	Pierwoszewo, dis. Szamotuły	C
9	Wróblewo, dis. Szamotuły	C/D
10	Nojewo, dis. Szamotuły	B/C?
11	Ryżyn, dis. Międzychód	B/C
12	Aleksandrowo, Bielsko, dis. Międzychód	B/C
13	Muchocin, dis. Międzychód	B/C
14	Pszczew, dis. Międzyrzecz	B/C-D
15	Pszczew, Peninsula Katarzyna, dis. Międzyrzecz	C-E
16	Wymyślanka (Linie 3), dis. Nowy Tomyśl	Early Middle Ages
17	Grońsko-Komorowo, dis. Nowy Tomyśl	B/C
18	Bródki, dis. Nowy Tomyśl	B/C
19	Niewierz, dis. Szamotuły	B/C-D
20	Wilczyna-Młynkowo, dis. Szamotuły	B/C
21	Sędzinko-Zalesie, dis. Szamotuły	B/C
22	Brzoza, dis. Szamotuły	B/C
23	Dakowy Mokre, dis. Nowy Tomyśl	B/C
24	Wielka Wieś-Kraplewo, dis. Poznań	B/C
25	Kamieniec, dis. Grodzisk	B
26	Trzcinica, dis. Kępno	B/C
27	Karna, dis. Wolsztyn	C-E

Tab. 1. List of early medieval strongholds in Western Greater Poland.

overviewing the most important information about the strongholds, as well as figures with excerpts from archival maps, LiDAR imagery, and aerial photographs (*Online Supplementary Material 1*).

History and methods of research

The distinctive form of the strongholds, rising prominently from the lowland landscape, has meant that they have attracted scholarly interest for more than 150 years. The first inventories and descriptions date back to the 19th century. The first archaeological association to engage in their research was the Society of Collectors of National Antiquities (Towarzystwo Zbieraczy Starożytności Krajowych) in 1841, whose statutory aims included the inventory and care of ‘strongholds, mounds, ramparts, pre-Christian cemeteries,



Fig. 2. Destruction at selected strongholds. A – Dakowy Mokre (October 2018); B – Grońsko-Komorowo (August 2020); C – Niewierz (August 2020); D – Linie-Wymysłanka (September 2012); E – Kąsinowo-Babórwko (October 2024) (data from Google Earth).

graves, and ruined old castles'. Among the sites visited and described were the fortified settlements in Niewierz, Sędzinko-Zalesie, Wilczyna-Młynkowo, Brzoza, Kąsinowo-Babórwko, Rudki, and Jastowo-Ostrolesie (Szamotuły County) (*Kierski 1867*, 221–224). About three decades later, the sites were visited by two German researchers, Wilhelm Schwartz and Rudolf Virchow, who made quite thorough descriptions that are at present

archived in the Archaeological Museum in Poznań. In addition, Schwartz and Virchow collected archaeological material from the surface of the fortified settlements, mainly ceramics, animal bones, and other artefacts such as knives or spindle whorls, which are now stored in the same museum.

Parallel to the professional activities described above, amateur examinations were carried out, consisting of digging within the area of strongholds either to satisfy curiosity and collect artefacts or to obtain building material. For these reasons, earth and stones were taken from the rampart flanking the stronghold in Dakowy Mokre (Nowy Tomyśl County) to be used in the construction of a road to nearby Uścięcice. The fortified settlement at Dakowy was particularly unlucky. In addition to levelling the ramparts (*Fig. 2: A; Fig. 4: A*), quite regular earthworks have been carried out there for several years – both on the ramparts and inside the enclosed area, during which numerous artefacts were excavated. The archaeological material deposited at the Archaeological Museum in Poznań testifies to the fact that the so-called ‘bulk finds’, i.e. unornamented or fragmented pottery and animal bones, were not collected, as only specific and the ‘most valuable’ artefacts such as bone awls, spindle whorls, a barbed bead, and iron knives were selected (*Kaczmarek et al. 2013, 199–245*). In turn, the ramparts of the Grońsko-Komorowo stronghold (Nowy Tomyśl County) had probably been used at the end of the 19th century to fill in the ditches in a nearby field, as a result of which half of their original perimeter was destroyed (*Fig. 2: B; Fig. 4: B*). Soil from part of the ramparts at Kamieniec (Grodzisk County) served a similar purpose and was most likely used to fill in the rather deep ponds established in the early 19th century outside of the stronghold (*Mizerka – Krasnodebski 2025, 150–151*). The heavy devastation of the site had already begun in the Middle Ages when the northern part of the ramparts, which had basically been a pile of accumulated building material requiring relatively little work, were re-used for the erection of a motte-type stronghold (*Fig. 3: D; Fig. 4: B*). For a different reason, part of the embankment at Niewierz (Szamotuły County) was ploughed away. There was no demand for earth or stones here; instead, it had been caused by the desire to enlarge the arable area (*Kowalenko 1938, 1*). As a result, the well-preserved rampart with a visible gate entrance in the southeastern part was widened and destroyed, creating an entrance with a width of about 25² (*Fig. 2: C; Fig. 4: C*). Probably for similar reasons, the fortified settlements in Linie-Wymyślanka (Nowy Tomyśl County), Dąbrówka (Poznań County), and Kąsinowo-Baborówko (Szamotuły County) disappeared from the landscape.

In such cases, archival descriptions or cartographic sources become invaluable and made it possible to search for the exact location or learn about the physical features of the strongholds. Some of the older cartographic sources date back to the 19th century and provide valuable data, especially because the Greater Poland area was subjected to intensive economic and industrial works, including land reclamation, which implied significant landscape transformation, contributing to the destruction of archaeological sites (*Hildebrandt-Radke – Przybycin 2011, 324; Mizerka 2021, 173–176*). An excellent example is the aforementioned fortified settlement at Linie-Wymyślanka, shown on the Meßtischblatt

² This is evidenced by the descriptions from Virchow and Schwartz as well as the results of geophysical prospecting (*Mizerka – Ryndziewicz in press*).

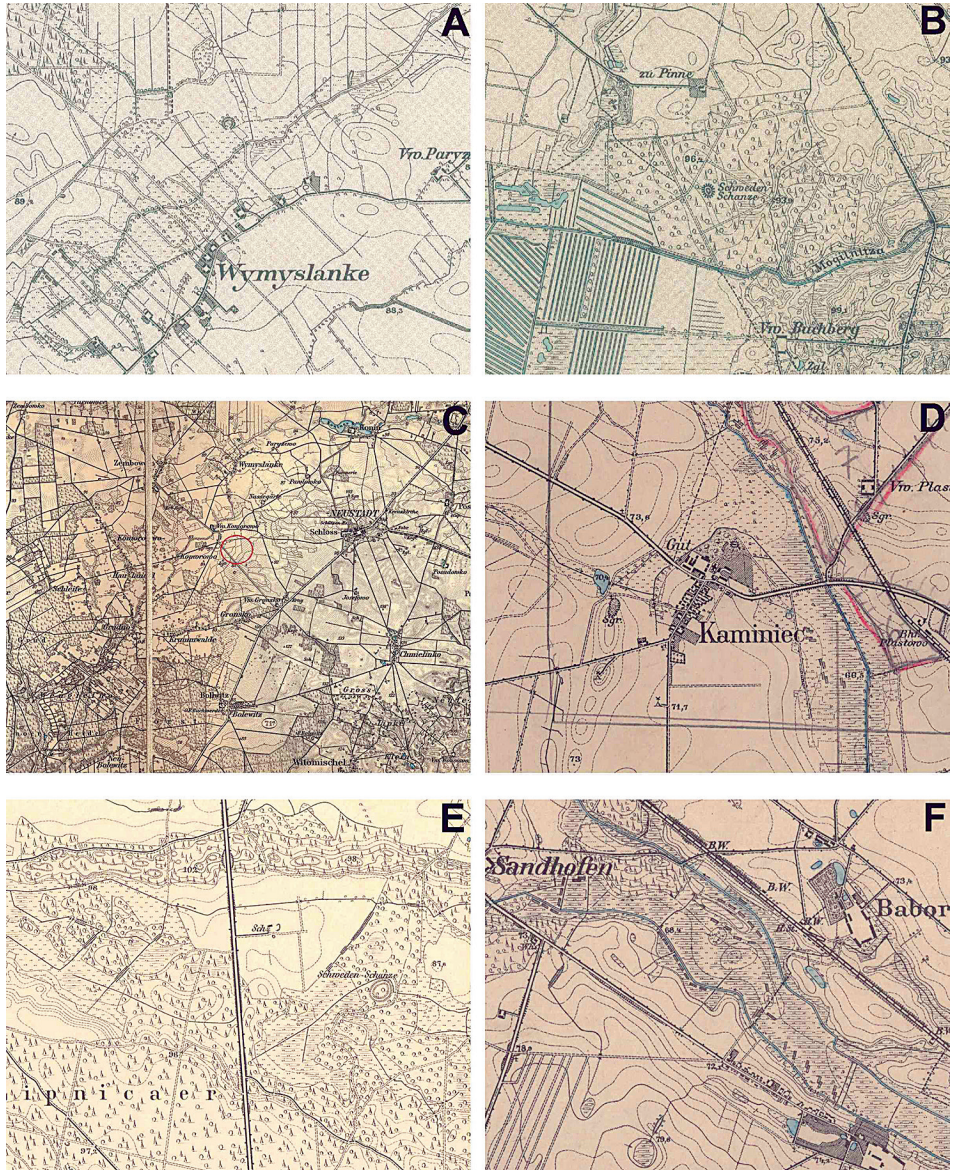


Fig. 3. Strongholds on historical maps. A – Linie-Wymyślanka (Messtichblatt map 3562 from 1893); B – Grońsko-Komorowo (Messtichblatt map 3563 from 1893); C – Grońsko-Komorowo (KDR map from 1898); D – Kamieniec (Messtichblatt map 2129 from 1890); E – Rudki (Messtichblatt map 3464 from 1892); F – Kąsinowo-Baborówko (Messtichblatt map 3465 from 1892) (Data from <https://igrek.amzp.pl/>).

map of 1892, which at the time appeared to have been preserved in excellent condition (Fig. 3: A). Interestingly, the stronghold at Grońsko-Komorowo, about 4.5 km away, already had visible damage to the rampart, yet it was the one that managed to preserve its terrain form to the present day. The fortified settlement at Linie-Wymyślanka must have

suffered fairly rapid or systematic devastation, as it has been levelled to the ground. In the late 1970s, it proved difficult to locate in the field³ (*Kurnatowska – Łosińska 1985*, 84). Identification occurred based on the small amount of archaeological material discovered in two test trenches (*Minta-Tworzowska 1985*, 120). Final confirmation of its location was provided by vegetation features visible in contemporary aerial photographs (*Fig. 2: D*).

Maps are also a valuable source of information on the progress and chronological sequence of destruction at a given site. This was the case with the aforementioned fortified settlement at Grońsko-Komorowo. On the Meßtichblatt map 1:25 000 drawn in 1891 and published in 1893 (*Archiwum Map Wojskowego Instytutu Geograficznego 1919–1939*, ‘Neustadt’ sheet, map emblem 3563), it is depicted as an oval structure with completely preserved ramparts (*Fig. 3: B*). At that time, the stronghold was located in an area overgrown by a mixed forest, which covered c. 6 km² and was bounded on the south by the Mogilnica River and on the east by a road leading from Jakubowo to Turowo. The nearest buildings were located about 650 m north of the site and a kilometre south, in the vicinity of the Buchberg Grange. The stronghold was therefore protected from being converted into arable land. This situation changed rapidly a few years later, as shown on the 1898 *Karte des Deutschen Reiches 1:100 000* (*David Rumsey Map Collection*, sheet 299.1. ‘Tirschtiel’, *Karte des Deutschen Reiches*; *Fig. 3: C*), where the site appears on a deforested meadow and the woodland area resembles its present state, with only a small patch to the south-west of the stronghold covered by trees. The distance to the nearest buildings remains similar, but the density of houses changed, which is particularly evident on the south side, where the Grońsko Grange is located, and on the north side, where the village of Komorowo was developing at that time. On this map, the fortified settlement had already had its ramparts breached from the south-east, but the entire northern and north-eastern sections are still preserved. The initial phase of its degradation appears to have been captured.

More complicated processes shaped the remnants of a stronghold from the older phases of the Early Middle Ages at Dąbrówka, which was also accompanied by a younger ring stronghold from the 13th to 14th century. Even though the early medieval stronghold had been levelled, most likely in the second half of the 19th or early 20th century, both fortified sites were marked on maps published until 1940 (*Pawlak – Pawlak 2019a*, 21–24). As a result of discrepancies in identification and descriptions between the mentioned sites, archaeological literature ceased to feature the former tribal-period stronghold, despite a solid information basis (cartographic sources, accurate descriptions, inventories). This state of affairs has been changed by a contemporary aerial photograph, which re-introduced the site to the scholarly discourse.

However, not all fortified settlements were displayed on the Meßtichblatt maps.⁴ There were probably various reasons behind this, such as the earlier degradation of stronghold

³ Linie, site 3. ‘Between Linie and Wymysłanka, 1.5 km from Linie, 40 m north of Wymysłanka, on the right bank of the river flowing through the adjacent meadows – a round, concave stronghold with a rampart destroyed from the south, from the side of the meadow and the river. 50 m in diameter’.

⁴ I refer to the Meßtichblatt maps because they show most of the known strongholds. For example, the map by G. D. Reymann from 1846 shows a small number of them, including those at Dąbrówka, Rudki, Jastrowie-Ostrosie, and Brzoza. Available at: www.wbc.poznan.pl/dlibra/doccontent?id=433176 [accessed 07-02-2023].

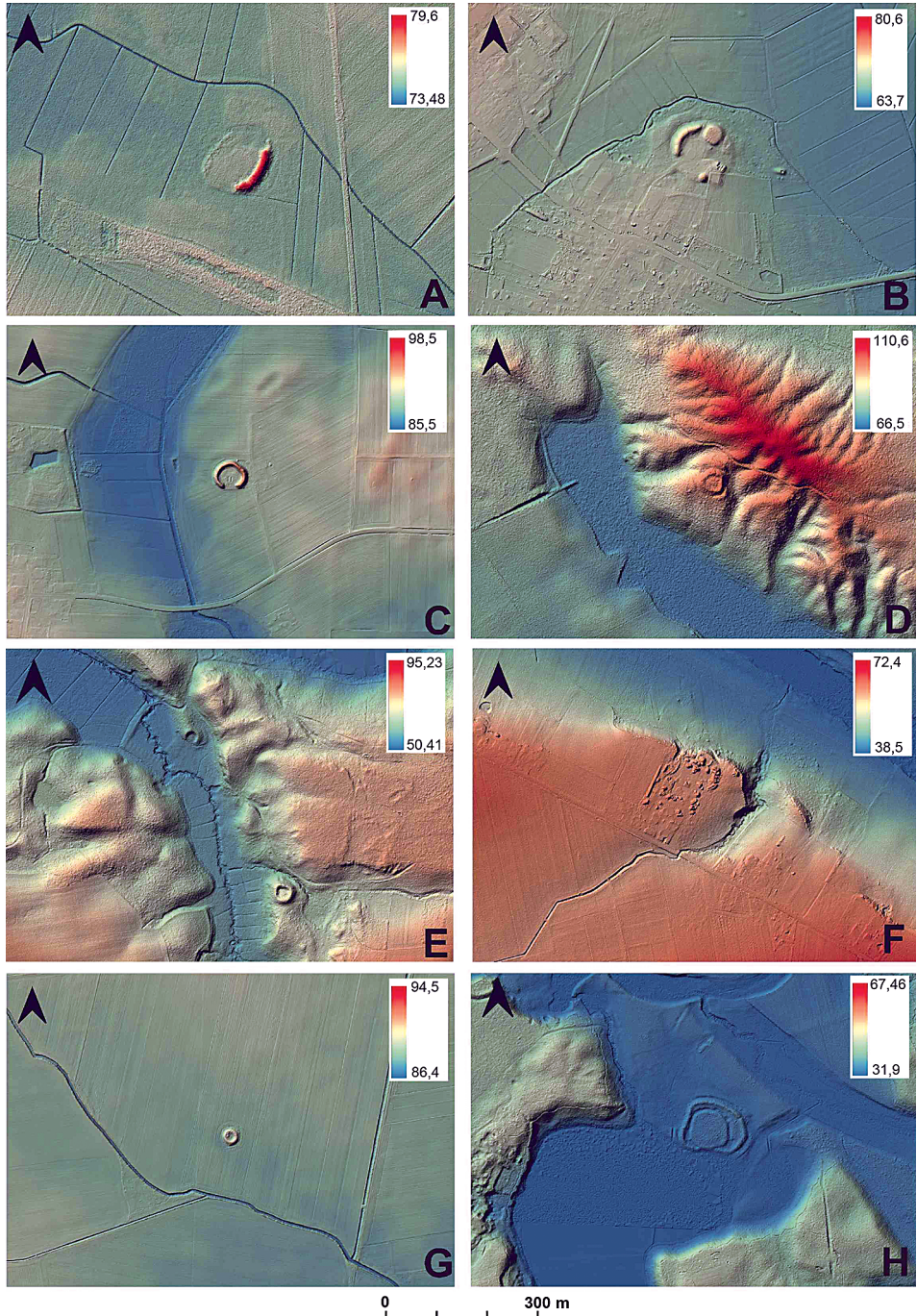


Fig. 4. Visualisations of Digital Terrain Model data. A – Dakowy Mokre; B – Kamieniec; C – Niewierz; D – Wielka Wieś-Krąplewo; E – Nojewo; F – Pierwoszewo; G – Bródki; H – Aleksandrowo/Bielsko (data from geoportal.gov.pl).

remains or the accessibility of the sites, which may have kept them outside the awareness of local inhabitants or amateur archaeologists. Thus, old maps do not show strongholds from Pawłowice (Poznań County), Krąplewo-Wielka Wieś (Poznań County; *Fig. 4: D*), or Nojewo (Szamotuły County; *Fig. 4: E*). While the identification in the field is not a problem for the latter two sites, the existence of a map would verify the presumed location in the case of the completely levelled fortified settlement at Pawłowice. Such verification would also have implications for the chronology. The existing dating is based on the ceramic material collected from the surface, which may, however, originate mostly from settlement located near the stronghold (*Pawlak – Pawlak 2019c*, 662).

The issue of strongholds was eagerly taken up by researchers. Western Greater Poland sites were included by Jan Nepomucen Sadowski in his work ‘Wykaz zabytków prehistorycznych na ziemiach polskich I: Porzeczka Warty i Baryczy’ (*Sadowski 1877*), Robert Behl in ‘Die vorgeschichtlichen Rundwälle im östlichen Deutschland’ (*Behl 1889*), Gregor Snowadzki in his article ‘Die vorgeschichtlichen Burgwälle der Provinz Posen’ (*Snowadzki 1909*), and finally by Oscar Schummacher, synthesising previous inventories of fortified settlements in ‘Die Burgwälle in der früheren preussischen Provinz Posen’ (*Schummacher 1924*). The first half of the 20th century also saw the publication of two works, still occupying an important place in archaeological literature, by *Dylik (1936)* and *Kowalenko (1938)*, which were of a synthesising character and collected all the strongholds known at the time. The difficult task of collecting, publishing, and initially establishing the chronology of all known sites, including early medieval strongholds from Greater Poland was undertaken by Witold Hensel with co-authors Zofia Kurnatowska and Alina Łosińska in seven volumes of ‘Studia i Materiały do osadnictwa Wielkopolski wczesnohistorycznej’ (*Hensel 1950; 1953; 1959; Hensel – Hilczer-Kurnatowska 1972; 1980; 1987; Hensel et al. 1995*). Subsequently, in the process of the verification campaign carried out in 1970–1980 and 1990, Kurnatowska and Łosińska, together with other researchers, subjected all the strongholds known at that time to test-trench research (*Kurnatowska – Łosińska 1985*, 56, 82–83). The so-called micro trenching method usually involved the excavation of several small trenches with an area of approximately 0.3 m² to identify the stratigraphy and obtain dating materials (*Kirschke – Prinke 1995*, 9), often making use of existing exposed areas at the strongholds, such as tree uproots, animal pits, slopes, etc. Information obtained in this way supplemented the Studies and Materials for Early Medieval Settlement, representing a catalogue unique in Poland (*Hensel et al. 1995*).

The described period around the turn of the third millennium was full of numerous archaeological initiatives, including excavations.⁵ One such project was an extensive verification of the Lusatian culture settlement that the stronghold at Dakowy Mokre was then considered to be. The excavation season in 1974 allowed for the verification of the earlier hypothesis and the establishment of its new early medieval chronology (*Śmigielski 1974; 1975*). As a result of the uncovering of quite a large area – about 140 m² in the circumference of the levelled rampart, the area adjacent to the rampart, and the central part of the bailey – this stronghold was for a long time one of the best examined in the western zone.

⁵ The text does not include information on the verification-test trench research conducted by Z. Kurnatowska and A. Łosińska. This information can be found in *Online Supplementary Material 1*.

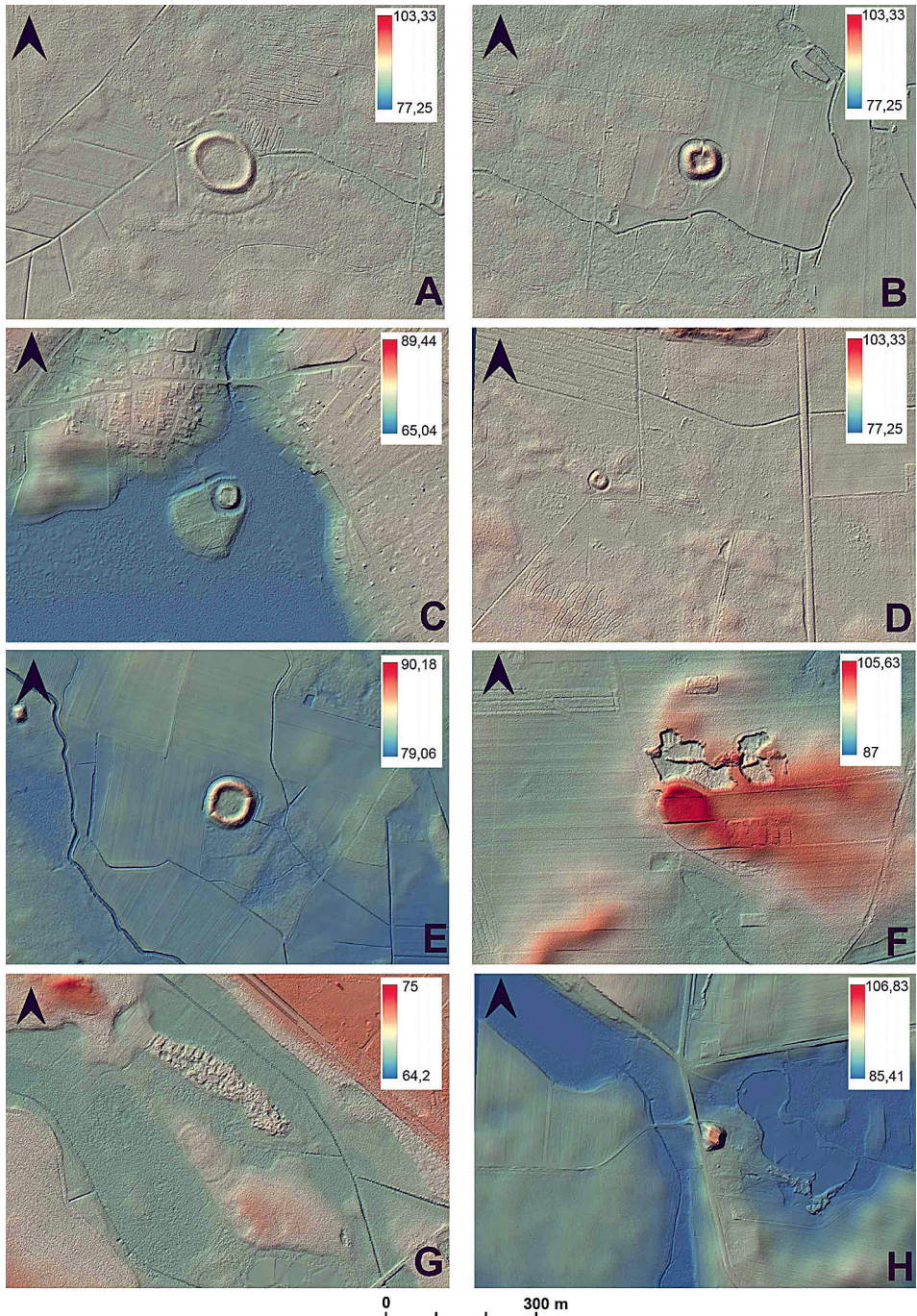


Fig. 5. Visualisations of Digital Terrain Model data. A – Rudki; B – Jastrowo-Ostrolesie; C – Ostroróg; D – Rudki-Lipnica; E – Sędzinko-Zalesie; F – Brzoza; G – Kąsinowo-Baborówko; H – Wilczyna-Młynkowo (data from geoportal.gov.pl).

Regrettably, the results of this research have not yet been published. Destroyed elements of the rampart construction, such as wooden beams, stone cobbles, a fascine base, as well as the road adjacent to the rampart, hearths, and a sunken feature of a presumed dwelling and storage function, were discovered (*Mizerka 2024*). The excavation revealed an assemblage of about two thousand fragments of pottery and animal bones, as well as objects of daily use (knives, spindle whorls, bone objects, nails), indicating intensive use of the settlement from the late 8th to the late 9th century (*Mizerka 2024, 203–204*).

Using the method of borehole drilling and small test trenches in the baileys, two heavily damaged areas were recognised in 1982 at Pierwoszewo (*Fig. 4: F*) and Wróblewo (Szamotuły County). Information was obtained on the structure and layer thickness along and an assemblage of archaeological material was retrieved: a small amount of pottery from Pierwoszewo and large amounts of ceramics and burnt clay finds from Wróblewo (*Cnotliwy 1990, 188–193, 229–236*). In 1985, a team from the Adam Mickiewicz University established one test trench in the northern part of the bailey of the Bródki stronghold (Nowy Tomyśl County; *Fig. 4: G*). At the time, three hearths with stone cobbles and burnt material were discovered, two of which contained sparse early medieval ceramic finds. That same year, the fortified settlement at Kaşinowo-Baborówko (Szamotuły County), which had already been heavily devastated (*Fig. 2: E*), was also investigated. Borehole drilling was used to identify its location and to estimate its original size (*Kurnatowska – Łosińska 1985, 78–85*).

About a dozen years later, a project was launched to learn more about early medieval strongholds in the Szamotuły area (*Pietrzak 2003*). It surveyed four sites: Rudki (*Fig. 5: A*) – 6 m² trench in the eastern part of the bailey; Jastrowo-Ostrolesie (*Fig. 5: B*) – 65 m² in total excavated including the southern and northern parts of the bailey and the area along the whole length of the entrance; Ostroróg (*Fig. 5: C*) – 20 m² trench within the ramparts; and Kaşinowo-Baborówko, where, as it later turned out, the excavation did not cover the area of the stronghold but only the adjacent settlement. Rich assemblages of artefacts were retrieved from the first two of the aforementioned sites, allowing the previous chronology and relationship between them to be sustained. Namely, the site in Rudki was founded earlier, as evidenced by the greater quantity of entirely hand-made pottery. In Jastrowo, the remains of a wooden feature (dwelling?) were identified, as was a pit thought to be the remains of a sunken-floor house (*Pietrzak 2003, 56*). On the other hand, the plan to survey the stronghold at Kaşinowo-Baborówko failed. Only an early medieval settlement from phase C was identified at the site, while recognition of the stronghold was hampered by heavy damage and accumulations visible in the field that gave a false impression of the existence of destroyed ramparts. Alina Łosińska recognised the aforementioned accumulations as remains of embankments on the basis of her own research carried out in 1986. A series of boreholes on the elevation showed the existence of cultural layers with early medieval material. The stronghold at Ostroróg had also been heavily damaged and transformed. It was first explored in the 1960s by Janusz Łopata while excavating a medieval castle at the same location. During the subsequent research in 1997, a trench on the south-eastern slope revealed, at a depth of 2.5 m from the top of the hill, a one-metre-thick sequence of layers associated with an early medieval rampart. The ceramic material collected during both excavations indicates the use of the stronghold in phase C (*Łopata 1962, 333–337; Pietrzak 2003, 65–66*).

In recent years, the research has followed the new conservation doctrine that severely restricts excavating, and thus there has been virtually no field research on strongholds in Western Greater Poland, with a single exception. The stronghold, or rather the entire settlement complex at Dąbrówka, remains unique in terms of its scale of archaeological research. It consists of a stronghold with a fortified craft settlement and numerous adjacent hamlets. Geophysical surveys and excavations on part of the bailey, the fortifications, and parts of the settlements around the stronghold provided a great number of finds and information (*Pawlak – Pawlak 2019b; Pawlak et al. 2024*). Research became possible due to the unfavourable circumstances of finding the stronghold related to the progressing modern development of the neighbouring area. As a result of research of a different character, a total area of 20 ares was subjected to study, leading to the identification of structures in the bailey, vestiges of the ramparts, the moat, and the northern forefield of the stronghold (*Pawlak – Pawlak 2019b*, 59–60). The information obtained is an invaluable source of knowledge regarding, among other issues, how the stronghold was constructed, its two-phase use, and interregional contacts reflected in the archaeological material. The assemblage of artefacts, including almost 11,000 vessels, has become a comparative basis for the material from Western Greater Poland.

The current state of research

At present, there are 27 sites in Western Greater Poland whose stronghold character and early medieval chronology are beyond doubt (*Tab. 1; Online Supplementary Material 1*). They vary mainly in terms of size. The assemblage includes strongholds with very little usable space, where the area of the ‘acropolis’ (maidan) is up to 0.05 ha (e.g. Bródki, Wilczyna-Młynkowo), small ones with standardised dimensions fitting the definition of a Tornow-Klenica type stronghold,⁶ the area of the maidan up to 0.25 ha (e.g. Grońsko-Komorowo, Niewierz, Jastrowo-Ostrolesie), and fortified settlements covering large areas, the maidan from 0.25 ha to 0.7 ha (Dakowy Mokre, Dąbrówka, Brzoza, and Rudki, Pawłowice). In addition, they are differentiated by other attributes, such as location in relation to the morphology of the terrain (the vast majority were founded in valleys) or construction, such as the height of the ramparts or the presence of additional structures (e.g. supplementary ditches and ramparts around the strongholds or their baileys).⁷ The excavation confirmed that a ditch, probably accompanied by a rampart, surrounded the settlement at Dąbrówka. A similar ditch surrounds a circular stronghold in Niewierz. Also, in the forested south-eastern section surrounding the site at Sędzinko-Zalesie, a ditch accompanied by a low rampart is visible. Ditches surrounding settlements preceding the establishment of the stronghold or associated with strongholds were discovered in the Chełmno-Dobrzyń Land

⁶ Strongholds of the Tornow-Klenica type are small structures not exceeding 0.5 hectares, located mainly in river valleys, which were used in the late 9th and early 10th century (*Dulinicz 1994; Tietz 2017*, 101)

⁷ This verification would also have an impact on the chronology of the stronghold in Pawłowice. The current chronology was established on the basis of pottery collected from the surface, with Ewa and Paweł Pawlak indicating that it came mainly from the settlement near the stronghold (*Pawlak – Pawlak 2019c*, 662).

(Chudziak 1990; Kowalewski 1997), as well as in Grzybowo in Wielopolska, which is already associated with the period of the Piast dynasty (Bogacki 2021). A ditch surrounding the settlement is also known from Lubrza (Świebodzin County), where it is dated to the period from the end of the 9th to the mid-10th century (Tabaka – Zamelska-Monczak 2011).

Strongholds of questionable character or chronology

In addition to the sites with well-established chronological and functional bases, there is a group which, with the current state of research, cannot be classified as strongholds either because of the uncertainty of their factual occurrence or uncertain dating. Among others, we are discussing the site at Chorzemin (Wolsztyn County), which has been included in the early medieval network of strongholds by Pawlak (2021, fig. 1). The site is now levelled, while archival information indicates that it was a motte-type stronghold that should be associated with the later phases of the Early Middle Ages. The KEZA record card⁸ refers to a nearby stronghold in Powodowo (Wolsztyn County). Here, we are also confronted with uncertainty and possibly a conical stronghold construction. The existence of a stronghold in Konojad (Grodzisk County) remains enigmatic as well. Information that it was to have existed between the Mogilnica River and the railway tracks was found in the work of W. Kowalenko, who, in turn, referred to the verification carried out by Zygmunt Zakrzewski. The latter stated the presence of a ring-shaped stronghold, which had certainly not existed in the landscape in 1938. It was not depicted on the Meßtischblatt maps, but the sketches of the destroyed stronghold that exist in the collection indicate its presence. Surface surveys and test trenches carried out in the area in 1983 yielded negative results. An aerial photograph published in 2021 provided a new impetus to address this issue. The vegetation markers visible approximately 200 m to the north of the original location of the former stronghold were arranged in a fairly regular circle (Pawlak 2021, fig. 4). A field verification was carried out in 2024, but it did not reveal archaeological material on the surface and the analysis of archival aerial photographs did not highlight a circular structure. The presence of the presumed stronghold requires further verification, as well as the consideration of other hypotheses: perhaps it is a paleochannel of the Mogilnica River, which flows nearby. The last stronghold, Zielona Chojna (Międzychód County), is located less than 600 m north-west of the stronghold in Aleksandrowo/Bielsko (Międzychód County) and occupies a natural elevation just above the Warta River. It is only partially preserved because, among other things, it was cut through by a military trench. The preserved fragment does not allow reconstruction of its original shape. Ceramic and flint artefacts recovered during test trenching and borehole drilling indicate that it is likely associated with the Lusatian culture.

The second sub-group of the dataset consists of fortified settlements with an uncertain dating. Based on the current state of research, including them in the network of early medieval strongholds would be a mistake (Michalski *et al.* 2016, tab. 1; Pawlak 2021, fig. 1). The first of these is located at the north-western part of the studied area, in Kolno

⁸ Record Card of the Archaeological Monument (Karta ewidencyjna zabytku archeologicznego or KEZA), which should cover every known archaeological site in Poland.

(Międzychód County). Although it is considered an early medieval site (*Michalski et al. 2016*, 220), the KEZA card states otherwise, presuming a late medieval chronology. The lack of ceramic material from the surface (only charcoal and daub fragments have been uncovered) does not provide the basis for determining the early medieval chronology of the stronghold and instead indicates a younger dating. The shape, dimensions, and location of the Kolno stronghold should be left out of the discussion for now, as the state of research in Western Greater Poland does not allow for an unequivocal categorisation based on these determinants. Due to its small dimensions and upland location, the stronghold in Kolno could be regarded as a motte-type stronghold. At the same time, the strongholds in Glinno or Wilczyna-Młynkowo with a fairly certain early medieval chronology may be analogous.

Two valley strongholds by the Samica River in Objezierze (Oborniki County) and Obrzycko (Szamotuły County) face a similar problem. The existence of the first – albeit heavily damaged – is beyond doubt, while its chronology is highly questionable. The artefacts found during surface surveys permitted the conclusion that it is a Lusatian culture stronghold that was reused in the Late Middle Ages. The site at Obrzycko, on the other hand, offers a more complicated situation, as its presence is established based on an archival but rather enigmatic reference. It does not contain a precise description regarding, among other things, the ramparts. What is known is that vessel fragments, dated to phases B/C, have been found on one of the hills above the Warta River, while a motte-type stronghold exists nearby. In conclusion, there is currently no evidence of a fortified settlement from the older phases of the Early Middle Ages.

The Rudki/Lipnica site is another stronghold neither listed in the Register of Archaeological Sites nor included in the catalogues to date and is still waiting for its chronology to be verified. It is located near the strongholds in Rudki and Jastrowo-Ostrolesie and was mentioned in the oldest inventory sources, but it was later forgotten and not encountered during subsequent verifications. It appears as a rather distinct small rectangular structure of 38 × 31 m with ramparts that are approximately 2.5 m high (*Fig. 5: D*). Although the size as well as the visibility of the site on LiDAR imaging may indicate its later chronology, it should not be forgotten that the phase C stronghold in Jastrowo-Ostrolesie is characterised by similar features. The Rudki/Lipnica site requires field verification and, regardless of the adopted chronology, also needs to be placed under conservation protection.

A separate problem is the location of the stronghold in Kaśinowo-Baborówko. Previous research showed the existence of early medieval layers with numerous artefacts in a place resembling a devastated rampart. Still, the research concluded that the stronghold must be located on the neighbouring western acclivity (*Pietrzak 2003*, 64). LiDAR visualisation, however, indicates the existence of a circular ditch, approximately 70 m south of the surveyed elevation (*Fig. 5: G*). The feature mentioned above is about 6–7 m wide and marks out a space about 110 m in diameter. It is not preserved along its entire perimeter but only in the northwestern and eastern parts. The anthropogenic character of the ditch is mostly unquestioned due to its regular shape, while the potential fortification at Kaśinowo requires further research.

Strongholds in enclaves

Strongholds that occur in enclaves with a chronological distinction are also noteworthy and the sites in Sędzinko-Zalesie, Niewierz, Brzoza, Bródki, and Wilczyna-Młynkowo

should now be regarded as such (*Fig. 1: 21, 19, 22, 18, 20; Tab. 1*). Ceramics collected from the surface or derived from verification excavations have made it possible to assign them to a single chronological horizon within phases B–C. It should be noted that this is a rather long period of about 200 years, and the current possibilities of dating ceramic material do not permit a narrowing of this range.

A cursory look at the group of listed strongholds shows that they have varied physical characteristics. The sites at Brzoza and Sędzinko-Zalesie are the largest, distinguished by their diameter of about 100 m. Moreover, the latter stands out for its still impressive ramparts that are around 4 m in height and are surrounded by a deep moat (*Fig. 5: E, F*). Topographically speaking, completely different locations were chosen for the foundation of sites similar in terms of size. The stronghold in Brzoza was located on a high natural elevation, away from the river or wetlands, while Sędzinko was built in a wetland area; it was connected with the Mogilnica River, which flows approximately 500 m to the west. The stronghold at Niewierz is similar in that it is located in a valley near watercourses. However, it has lower ramparts and a smaller interior diameter, bringing it closer to the definition of so-called Tornow-Klenica-type fortified settlements. On the other hand, the very small stronghold in Bródki with a diameter of 40 m resembles a later site, although a few potsherds recovered from two hearths with no signs of damage (*Minta-Tworzowska 1985, 110–113*), seem to date the site to the earlier phases of the Early Middle Ages. The stronghold at Wilczyzna-Młynkowo (*Fig. 5: H*), on the other hand, has a unique location. It was founded on a natural elevation of about 100 m above sea level, which had probably been levelled at the top and surrounded by low ramparts (*Schummacher 1924, 51*). The small space of the ‘bailey’ now has limited accessibility, as it is located on private property, fenced, and overgrown with dense coniferous forest, but the cobblestones visible during the visit by Schwartz and Virchow, together with the traces of heavy burning and the unusual location, led them to describe the site as a cult stronghold (*Schwartz 1880, 3*). With its upland location and relatively small size, this site resembles two other strongholds in Glinno (Poznań County) and Kraplewo-Nowa Wieś (Poznań County; *Fig. 4: D*). They all differ in shape, but perhaps the pentagonal outline of Kraplewo-Nowa Wieś is the result of the better state of preservation compared to the others. The different shapes may also be due to the way in which the individual morphological features of the elevations were used.

In their study of the stronghold at Dąbrówka, Ewa and Paweł Pawlak separated a group including the sites in Glinno, Kraplewo-Nowa Wieś, Pawłowice, and Brzoza, which, due to its location, fit into the two described enclaves (*Pawlak – Pawlak 2019c, 663–664*). They pointed to the large strongholds at Pawłowice, Brzoza, and Dąbrówka located inside the enclave and two more analogous upland strongholds flanking them. The authors explain that these sites might have had a type of cooperation at some stage, perhaps to achieve common political and economic goals.

Strongholds in pairs

Studies conducted on the stronghold network in Western Pomerania have revealed the phenomenon of strongholds in pairs. They have been recorded, e.g. in Żółte (Drawsko County), Radacz (Szczecin County), and Bobięcino (Bytów County). Archaeological finds prove that they functioned, at least for a certain period, simultaneously. The occurrence

of pairs of strongholds on a small area is an important premise for considering their function and role (Chudziak *et al.* 2009, 122–126; Chudziak 2014, 27–28). This phenomenon is also clear in Western Greater Poland, where two almost identical sites are located in the Sieraków Landscape Park west of the village of Nojewo. Despite being omitted from the registry of archaeological sites and not having a KEZA card, both can be clearly described as ring-shaped strongholds with a diameter of about 37–38 m and ramparts of a similar, two-meter height. They are separated by a short distance of 350 m, but the height of the terrain on which they are located is significantly different. The first stronghold occupies part of a natural elevation, while the second is located more than 12 m below, directly on the bottom of the Osiecznica River valley. Only the first site, preserved in excellent condition, with a presumed entrance on the eastern side, is listed in the Register of Monuments (Fig. 4: E). The second, with a destroyed rampart along a distance of about 20 m in the south-western part, is not included (Fig. 4: E).

The second example of paired sites gives the aforementioned strongholds in Rudki, measuring 120 × 150 m, and in Jastrowo-Ostrolesie, which is a much smaller site, about 80 m in diameter. In a straight line, they are separated by a distance of about 500 m. The ceramic material from small test trenches that were unearthed in the baileys of both strongholds indicates that they were in use during phases B–C. Nevertheless, as the research in Rudki provided a greater amount of hand-made pottery, it is considered to be older than Jastrowo-Ostrolesie (Pietrzak 2003, 71). Another pair, albeit with a different dynamic, is formed by the strongholds in Grońsko-Komorowo and Linie-Wymyślanka. Their location and the distance of approximately 5 km (in a straight line) between them do not directly suggest a symbiotic relationship. In order to identify these objects, which are quite similar in shape and size, it would be necessary to determine their chronology and function. This would allow us to determine whether they functioned simultaneously, but served different purposes, or were differentiated by the chronology and temporal sequence of both sites.

Chronology

The chronology of almost all of the described sites is based on the ceramic material, for which we are forced to operate with rather wide time ranges. Only a few of the strongholds have been dated using scientific methods. The site in Pszczew, with more than ten radiocarbon and dendrochronological measurements (Kara – Banach 2012), and the one in Dąbrówka, dated by nine radiocarbon and dendrochronological measurements (Goslar – Szmyt 2019, 473–477; Pawlak *et al.* 2024, 81–82), rank best in this respect. Of the others, only the stronghold in Dakowy Mokre has one radiocarbon dating (Mizerka 2024, 203–204). At the present stage of research, phases B and C predominate among the established chronologies of the sites; later phases have been recognised only sporadically. To some extent, this may reflect how these chronologies are determined: in most cases, they are based on surface materials, where the probability of discovering either diagnostic pottery fragments or a representative assemblage is rather low. Strongholds established in the B/C phase and lasting into the later phases should be considered exceptionally rare, which has given rise to further hypotheses attempting to explain this state of affairs. The chronology of the stronghold in Pszczew stands out among the described sites. Located on the Katarzyna Peninsula on Lake Kochle, it functioned from the end of the 9th/early 10th century until

the middle of the 12th century, with a break of several decades in the 11th century (*Kara – Banach 2012*). The stronghold in Pszczew is considered a tribal structure taken over peacefully by the Piasts in the middle of the 10th century, as the lack of signs of destruction suggests.

The upper boundary of the functioning of the strongholds in Niewierz and Wróblewo has been set at phase D, which is probably the result of finding fragments of fully wheel-thrown pottery. In this context, it should be mentioned that the lower boundary of the occurrence of such pottery has been recently shifted from the first half of the 10th century to the end of the 9th century (*Biermann 2006*, 117–125; *Trzeciński 2018*, 42–67; *Kara 2021*, footnote 45; *Kolenda – Zamelska-Monczak 2021*, 444). In practice, this means that the aforementioned strongholds may be associated with the tribal period, preceding the crystallisation of the Piast state. The chronologies of most sites were established solely on ceramic material excavated during the verification research by Z. Kurnatowska and A. Łosińska, carried out in 1970–1980. Although formal and stylistic analysis of ceramic vessels still plays an important role in chronological frameworks, its accuracy is far from satisfactory. Due to the significant dynamics of settlement, political, and cultural changes that took place between the 8th and 10th century, such low precision in determining the time of use of individual sites is now difficult to accept. It should be emphasised that there are sites that, apart from the aforementioned verification research in the 1980s, have not been examined by larger surveys (*Pawlak – Pawlak 2019c*, 672). A project undertaken at the Institute of Archaeology and Ethnology of the Polish Academy of Sciences in Poznań and financed by the National Science Centre and carried out since 2022, aims to continue the study of strongholds in this area. Within the framework of the grant, five sites are being researched by geophysical and excavation methods: Niewierz, Sędzinko-Zalesie, Grońsko-Komorowo, Dakowy Mokre, and Kamieniec. The research results to date have yielded important information. The geophysical survey has provided information about the activities in the baileys and the intensity of their use. In the case of Dakowy Mokre, it brought a new quality of information, revealing a hitherto unknown structure within the bailey, which is of major importance and potential; this discovery may shed new light not only on a more complete understanding of the character of the researched site but also on the genesis, character, and development of fortification centres from the older as well as the turn of the older and younger phases of the Early Middle Ages in Greater Poland. The discovered structure, i.e. a ditch with a circular outline about 50 m in diameter with two entrances and numerous features inside, was described in an article (*Mizerka – Ryndziejewicz in press*).

Excavations have been carried out thus far at three strongholds – Sędzinko-Zalesie, Niewierz and Grońsko-Komorowo – and archaeological material has been obtained, including samples for scientific dating.

Conclusion

Research on early medieval strongholds has had a long tradition in Greater Poland, as evidenced by numerous publications and archaeological material stored in museums (*Hilczyerówna 1967*; *Zamelska 1995*; *Teske 2003*; *Brzostowicz 2002*; *2016*; *Kara et al. 2006*; *Kaczmarek et al. 2013*). The western part of Greater Poland, however, has been studied in a limited, rather selective manner. The preliminary analysis of the strongholds in this

region presented in this paper points to its high research potential, not least because of the good state of preservation of the monuments. There is a number of issues that loom on the horizon, starting with the most important ones, i.e. the chronological distinction of the sites, through their functional analysis and the research of the micro-regional networks, to the understanding of the social and political aspects of the formation, functioning, and, finally, the demise of strongholds. The strongholds occurring in pairs or enclaves, which are preserved particularly in the northern part of the Szamotuły County, seem to be extremely intriguing in this context.

In summary, in the area of Western Greater Poland, we are confronted with interesting strongholds, diverse among themselves in terms of size and topography. The previous research has mostly consisted of establishing the chronology, but the ongoing investigation can bring us closer to finding answers to important questions about the origins of the settlement network, its transformation, and the reasons for its decline. The hypothesis presented in the article by Andrzej Wędzki assumes that in the area of Western Greater Poland, 'there was no formation of a larger, compact settlement complex', but only 'a few small territorial communities in the form of collections of settlements emerged' (Wędzki 1996, 70), the collapse of which was to have taken place under the influence of the formation of the state organisation and 'liquidation ... , often by force, of inconvenient former territorial centres as well as deliberate changes introduced in the settlement structure of larger areas of the country' (Wędzki 1996, 71). The question of the reasons for the disappearance of the stronghold network in Western Greater Poland is still open, although there is clearly a dominant belief in their military conquest and destruction. This hypothesis was based, among other things, on the research of strongholds from the middle and upper Odra and Łąd land, where there are clear traces of armed attacks in the form of heavy burning at the strongholds, the discovery of numerous (abandoned) objects of daily use, as well as elements of warfare. Did the fortified settlements in Western Great Poland suffer a similar fate as, for example, Bruszczewo and Spałwie Bonikowo (Kurnatowska – Kara 2008, 161)? Certainly, the approach of the Piast rulers differentiated these regions, as some of the settlements in Southern Greater Poland were taken over and rebuilt, while those in the western part of the region show no evidence of occupation after the middle of the 10th century. The literature supports the hypothesis of armed conquest, as well as the resettlement of part of the population in the territory of the newly forming state in order to explicitly eliminate competitors (Brzostowicz 2009, 25–26). In the 30 years that have passed since Andrzej Wędzki wrote his article, no significant breakthrough has been made that could unequivocally confirm or refute the hypotheses put forward at the time. It seems that only further archaeological research of the fortified settlements and their hinterland can bring us closer.

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References

- Archivum Map Wojskowego Institutu Geograficznego 1919–1939*. 'Neustadt' sheet, map emblem 3563. Available at: http://maps.mapywig.org/m/German_maps/series/025K_TK25/3563_Neustadt_1893.jpg [accessed 07-02-2023].
- Behla, R.* 1889: Die vorgeschichtlichen Rundwalle im ostlichen Deutschland. Berlin: Asher.
- Biermann, F.* 2006: Sypniewo. Ein fruhmittelalterlicher Burg-Siedlungskomplex in Nordmasowien. *Studia i Materiały* 4. Warszawa: IAE PAN.
- Bogacki, M.* 2021: Zdjęcia lotnicze i fotogrametryczne. Opracowanie danych: stanowisk 1 i 6 w Grzybowie. In: M. Danielewski – J. Wrzesiński – A. Głód (eds.), *Wczesnośredniowieczny gród w Grzybowie*. Warszawa: Instytut Archeologii i Etnologii PAN, 113–120.
- Brzostowicz, M.* 2002: Bruszczewski zespół osadniczy we wczesnym średniowieczu. Poznań: PTPN.
- Brzostowicz, M.* 2009: Tradycja i nowy porządek. Mieszkańcy Wielkopolski w obliczu przemian zachodzących w X–XIII wieku. In: S. Moździoch (ed.), *Stare i nowe w średniowieczu. Pomiędzy innowacją a tradycją*. Wrocław: Instytut Archeologii i Etnologii PAN, 23–49.
- Brzostowicz, M.* 2016: Grodzisko wczesnośredniowieczne w Sławiu, woj. wielkopolskie. Wyniki badań archeologicznych. Poznań: Muzeum Archeologiczne.
- Chudziak, W.* 1990: Wczesnośredniowieczny zespół osadniczy w rejonie Gronowa, woj., toruńskiej (w świetle badań w latach 1987–1989). In: J. Olczak (ed.), *Studia nad osadnictwem średniowiecznym ziemi chełmińskiej. Gronowski mikroregion osadniczy*. Toruń: Wydawnictwo Naukowe UMK, 44–68.
- Chudziak, W.* 2014: Wczesnośredniowieczne osadnictwo Pojezierza Zachodniopomorskiego w najnowszych badaniach ośrodka toruńskiej archeologii – nowe pytania, stare problemy. In: H. Paner – M. Fudziński – W. Świętosławski (eds.), *Pomorze we wczesnym średniowieczu w świetle źródeł archeologicznych*. Gdańsk: Muzeum Archeologiczne w Gdańsku, 19–32.
- Chudziak, W. – Kaźmierczak, R. – Niegowski, J. – Ważny, T.* 2009: Ze studiów nad genezą wczesnośredniowiecznych mostów na obszarze Pomorza. *Przegląd Archeologiczny* 57, 99–131.
- Cnotliwi, E.* 1990: Grodziska wczesnośredniowieczne w południowej części województwa piłskiego w wyniku badań weryfikacyjnych. *Slavia Antiqua* 32, 171–240.
- David Rumsey Map Collection*, sheet 299.1. 'Tirschtiegel', Karte des Deutschen Reiches. Available at: <https://www.davidrumsey.com/luna/servlet/detail/RUMSEY~8~1~212500~5500536:299-1--Tirschtiegel-?mi=0&trs=2&qvq=q:299.1.%20Tirschtiegel;lc:RUMSEY~8~1> [accessed 07-02-2023].
- Dulnicz, M.* 1994: Problem datowania grodzisk typu Tornow i grupy Tornow-Klenica. *Archeologia Polski* 39, 31–49.
- Dylik, J.* 1936: Analiza geograficznego położenia grodzisk i uwagi o osadnictwie wczesnohistorycznym Wielkopolski. Poznań: Księgarnia św. Wojciecha.
- Dzieduszycki, W.* 1990: Podstawy periodyzacji okresu wczesnośredniowiecznego w Wielkopolsce. In: Z. Kurnatowska (ed.), *Stan i potrzeby badań nad wczesnym średniowieczem w Polsce*. Poznań: Polskie Towarzystwo Przyjaciół Nauk, 155–159.
- Feldmanowski, H.* 1877: Wykopalisko pawłowickie. Poznań: Księgarnia Żupańskiego.
- Goslar, T. – Szmyt, M.* 2019: Datowania radiowęglowe zespołu osadniczego w Dąbrówce na stanowisku 2 i w jego otoczeniu. In: M. Szmyt – P. Pawlak (eds.), *Dwa grody nad Wiryką. Dąbrówka, stanowiska 1 i 2, woj. wielkopolskie*. Poznań: Muzeum Archeologiczne, 473–477.
- Hensel, W.* 1950: *Studia i materiały do osadnictwa Wielkopolski wczesnohistorycznej 1*. Poznań: Polskie Towarzystwo Prehistoryczne.
- Hensel, W.* 1953: *Studia i materiały do osadnictwa Wielkopolski wczesnohistorycznej 2*. Poznań: Polskie Towarzystwo Prehistoryczne.
- Hensel, W.* 1959: *Studia i materiały do osadnictwa Wielkopolski wczesnohistorycznej 3*. Warszawa: Państwowe Wydawnictwo Naukowe.
- Hensel, W. – Hilczer-Kurnatowska, Z.* 1972: *Studia i materiały do osadnictwa Wielkopolski wczesnohistorycznej 4*. Warszawa: Państwowe Wydawnictwo Naukowe.
- Hensel, W. – Hilczer-Kurnatowska, Z.* 1980: *Studia i materiały do osadnictwa Wielkopolski wczesnohistorycznej 5*. Warszawa: Państwowe Wydawnictwo Naukowe.
- Hensel, W. – Hilczer-Kurnatowska, Z.* 1987: *Studia i materiały do osadnictwa Wielkopolski wczesnohistorycznej 6*. Warszawa: Państwowe Wydawnictwo Naukowe.

- Hensel, W. – Hilczer-Kurnatowska, Z. – Losińska, A. 1995: Studia i materiały do osadnictwa Wielkopolski wczesnohistorycznej 7. Warszawa: Państwowe Wydawnictwo Naukowe.
- Hilczerówna, Z. 1967: Dorzecze górnej i środkowej Obry od VI do początków XI wieku. Wrocław–Warszawa–Kraków: Zakład Narodowy im. Ossolińskich.
- Hildebrandt-Radke, I. – Przybycin, J. 2011: Zmiany sieci hydrograficznej i zalesienia a melioracje regionu środkowej Obry (centralna Wielkopolska) w świetle danych historycznych i materiału kartograficznego. *Przegląd Geograficzny* 83, 323–342. <https://doi.org/10.7163/PrzG.2011.3.2>
- Jasnosz, S. 1964: Starożytne osadnictwo na terenie Objezierza, pow. Oborniki. *Fontes Archaeologici Ponsanienses* 15, 164–189.
- Kaczmarek, J. – Kaczmarek, H. – Silska, P. 2013: Początki starożytnictwa wielkopolskiego w korespondencji Towarzystwa Przyjaciół Nauk Poznańskiego. Poznań: Poznańskie Towarzystwo Przyjaciół Nauk.
- Kara, M. 2021: Archeologia o kulturze o mentalności społeczeństw wczesnośredniowiecznych tzw. barbarzyńskiej Europy w X wieku. Studium przypadku: grzebień ze Stroszek koło Gieczu. Wrocław: Chronicon.
- Kara, M – Banach, B. 2012: Badania weryfikacyjno-sondazowe wczesnośredniowiecznego zespołu grodowego w Pszczewie 2-2a, woj. lubuskie. Warszawa: Instytut Archeologii i Etnologii PAN. Unpublished manuscript.
- Kara, M. – Krąpiec, M. – Teske, G. 2006: Wyniki badań archo-dendrochronologicznych wybranych grodzisk wczesnośredniowiecznych z terenu historycznej Wielkopolski, przeprowadzonych w 2005 roku. *Fontes Archaeologici Ponsanienses* 42, 125–144.
- Kierski, E. 1867: Wspomnienie o bytem Towarzystwie Starożytności w Szamotułach. *Przegląd Wielkopolski* 3, 209–226.
- Kihl-Byczko, E. 1972: Inwentaryzacja obiektów archeologicznych na terenie województwa poznańskiego w roku 1969. *Fontes Archaeologici Ponsanienses* 21, 188–275.
- Kirschke, B. – Prinke, A. 1995: Grodziska w województwie poznańskim. Katalog stanowisk archeologicznych. Poznań: Muzeum Archeologiczne.
- Kolenda, J. – Zamelska-Monczak, K. 2021: The North or the South? Early medieval ceramics decorated with a zoned ornament-the result of local changes or interregional contacts? *Archeologické rozhledy* 73, 423–454. <https://doi.org/10.35686/AR.2021.13>
- Kostrzewski, J. 1916: Z badań nad przeszłością przeddziejową Wielkopolski w ostatnich trzech latach. *Zapiski Muzealne* 1, 35.
- Kowalenko, W. 1938: Grody i osadnictwo grodowe Wielkopolski wczesnohistorycznej (od VII do XII wieku). Poznań: Polskie Towarzystwo Prehistoryczne.
- Kowalewski, J. 1997: Rola rowów we wczesnośredniowiecznych osadach z rejonu Pojezierza Chełmińskiego-Dobrzyńskiego. *Archaeologia Historica Polona* 6, 101–121.
- Kozierowski, S. 1922: Badania nazw topograficznych na obszarze dawnej zachodniej i środkowej Wielkopolski 2. Poznańskie Towarzystwo Przyjaciół Nauk.
- Kurnatowska, Z. – Kara, M. 2008: Wielkopolska południowa między Ziemią Gnieźnieńską a Śląskiem. In: J. Kolenda (ed.), *Milicz. Clavis Regni Poloniae. Gród na pograniczu*. Wrocław: Instytut Archeologii i Etnologii PAN, 157–169.
- Kurnatowska, Z. – Losińska, A. 1983: Weryfikacja grodzisk wielkopolskich na półmetku. *Fontes Archaeologici Ponsanienses* 32, 22–62.
- Kurnatowska, Z. – Losińska, A. 1985: Sprawozdanie z weryfikacji grodzisk wielkopolskich w latach 1983–1984. *Fontes Archaeologici Ponsanienses* 34, 77–85.
- Lopata, J. 1961: Grody i osadnictwo grodowe we wczesnym średniowieczu (VI–XII wiek). In: F. Brzeskiwniewicz (ed.), *Almanach Szamotulski*. Poznań: Wydawnictwo Poznańskie, 30–41.
- Lopata, J. 1962: Sprawozdanie z prac wykopaliskowych na wzgórzu zamkowym w Ostrorogu, pow. Szamotuły. *Fontes Archaeologici Ponsanienses* 13, 333–337.
- Michalski, T. – Makohonienko, M. – Kara, M. – Jasiewicz, J. 2016: Poznań na tle wczesnośredniowiecznego osadnictwa grodowego obszaru Wielkopolski w kontekście uwarunkowań środowiskowych – studium geoinformacyjne. In: M. Kara – M. Makohonienko – A. Michałowski (eds.), *Przemiany osadnictwa i środowiska przyrodniczego Poznania i okolic od schyłku starożytności do lokacji miasta*. Poznań: Bogucki Wydawnictwo Naukowe, 213–245.
- Minta-Tworzowska, D. 1985: Pradziejowe i wczesnośredniowieczne osadnictwo w rejonie Lwówka. *Fontes Archaeologici Ponsanienses* 34, 94–133.

- Mizerka, J. 2021: Wczesnośredniowieczne grodzisko w Dusinie, pow. gostyński, woj. wielkopolskie w świetle ponownej analizy archeologicznej. *Folia Praehistorica Posnaniensia* 26, 171–226. <https://doi.org/10.14746/fpp.2021.26.07>
- Mizerka, J. 2024: Konstrukcja słupowa na majdanie grodziska w Dakowach Mokrych, pow. nowotomyski. *Slavia Antiqua* 65, 189–215. <https://doi.org/10.14746/sa.2024.65.9>
- Mizerka, J. – Krasnodębski, D. 2025: Rewitalizacja wczesnośredniowiecznego grodziska w Kamieńcu, pow. grodziski w świetle najnowszych badań geofizycznych oraz serii wierceń archeologicznych. *Fontes Archaeologici Posnanienses* 60, 131–155.
- Mizerka, J. – Ryndziejewicz, R. *in press*: Internal construction in the central part of the stronghold from the turn of the older and younger phases of the early Middle Ages in Dakowy Mokre. The character and function of a stronghold in the light of new geophysical research. *Archäologische Korrespondenzblatt*.
- Moraczewski, J. 1841: Sprawozdanie roczne Towarzystwa zbieraczyw starożytności w Szamotułach. *Tygodnik Literacki: literaturze, sztukom pięknym i krytyce poświęcony* 4, 417–419.
- Pawlak, E. 2021: Sieć osadnicza i szlaki komunikacyjne na zachód od Poznańskiego Przełomu Warty w starszych fazach wczesnego średniowiecza. *Slavia Antiqua* 62, 115–146. <https://doi.org/10.14746/sa.2021.62.6>
- Pawlak, E. – Pawlak, P. 2019a: Historia badań nad osadnictwem wczesnośredniowiecznym w Dąbrówce nad Wiryńką. In: M. Szmyt – P. Pawlak (eds.), *Dwa grody nad Wiryńką. Dąbrówka, stanowiska 1 i 2, woj. wielkopolskie*. Poznań: Muzeum Archeologiczne, 9–26.
- Pawlak, E. – Pawlak, P. 2019b: Przebieg badań wykopaliskowych na stanowisku 2 w Dąbrówce. In: M. Szmyt – P. Pawlak (eds.), *Dwa grody nad Wiryńką. Dąbrówka, stanowiska 1 i 2, woj. wielkopolskie*. Poznań: Muzeum Archeologiczne, 59–61.
- Pawlak, E. – Pawlak, P. 2019c: Gród na stanowisku 2 w Dąbrówce na tle sieci wczesnośredniowiecznych warowni z czasów przedpiastowskich na zachód od Poznańskiego Przełomu Warty. In: M. Szmyt – P. Pawlak (eds.), *Dwa grody nad Wiryńką. Dąbrówka, stanowiska 1 i 2, woj. wielkopolskie*. Poznań: Muzeum Archeologiczne, 660–675.
- Pawlak, E. – Pawlak, P. 2019d: Gród z czasów plemiennych na stanowisku 2 w Dąbrówce. Umocnienia oraz zabudowa majdanu. In: M. Szmyt – P. Pawlak (eds.), *Dwa grody nad Wiryńką. Dąbrówka, stanowiska 1 i 2, woj. wielkopolskie*. Poznań: Muzeum Archeologiczne, 67–146.
- Pawlak, P. – Pawlak, E. – Makowiecka, M. – Makowiecki, D. – Milecka, K. – Rennwanz, J. 2024: Studnia z Dąbrówki koło Poznania. Nowe źródła do badań nad początkami osadnictwa grodowego w Wielkopolsce. *Slavia Antiqua* 65, 47–93. <https://doi.org/10.14746/sa.2024.65.4>
- Pietrzak, S. 2003: Wstępne wyniki badań grodzisk wczesnośredniowiecznych na Równinie Szamotulskiej. *Wielkopolskie Sprawozdania Archeologiczne* 6, 52–75.
- Sadowski, J. N. 1877: Wykaz zabytków prehistorycznych na ziemiach polskich I. Porzeza Warty i Baryczy. Kraków: Akademia Umiejętności.
- Schummacher, O. 1924: Die Burgwälle in der früheren preussischen Provinz Posen. Leipzig: Curt Kabitzsch.
- Schwartz, W. 1880: Nachtargzu den Materialien zur prähistorischen Kartographie der Prov. Posen (Zusammenstellung der Funde und Fundorte). Poznań: Decker W.
- Schwartz, W. 1892: Zur prahistorischen cartographie der Provinz Posen. *Zeitschrift der Historischen Gesellschaft für die Provinz Posen*, 101–102.
- Snowadzki, G. 1909: Die vorgeschichtlichen Burgwälle der Provinz Posen. *Aus dem Posener Lande* 4, 153–156.
- Śmigielski, W. 1974: Sprawozdanie z badań. Poznań: Instytut Archeologii i Etnologii PAN. Unpublished manuscript.
- Śmigielski, W. 1975: Dakowy Mokre, pow. Nowy Tomyśl, stanowisko 1. *Informator Archeologiczny* 8, 159–160.
- Tabaka, A. – Zamelska-Monczak, K. 2011: Wczesne średniowiecze. In: J. Kabaciński – I. Sobkowiak-Tabaka (eds.), *Materiały do wczesnych pradziejów Wielkopolski. Osadnictwo pradziejowe i wczesnośredniowieczne Lubrzy*. Poznań: Instytut Archeologii i Etnologii PAN, 443–716.
- Teske, G. 2003: Budownictwo grodowe w Wielkopolsce południowej w państwie pierwszych Piastów. *Wielkopolskie Sprawozdania Archeologiczne* 6, 105–115.
- Tietz, B. 2017: Upadek grodów wschodniej części strefy Tornow-Klenica a proces budowy władztwa Piastów na terenie Wielkopolski. In: J. Poleski – W. Drelicharz – D. Jasiak (eds.), *Spór o początki państwa polskiego*. Kraków: Historia Iagiellonica, 99–117.

- Trzeciecki, M. 2018:* Grody „plemienne” i „wczesnopaństwowe” na Mazowszu (IX–XI w.). Stan badań, problematyka i możliwości interpretacji. *Historia Slavorum Occidentis* 17, 42–67. <https://doi.org/10.15804/hso180202>
- Virchow, R. 1877:* Die Burgwalle an der Mogilnitsa. *Zeitschrift für Ethnologie* 9, 243–254.
- Virchow, R. 1878:* Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrgang 1878. Sitzung am 19. Oktober 1878. *Zeitschrift für Ethnologie* 10, 309–356.
- Wędzki, A. 1996:* Na zachód od Poznania. Uwagi nad strukturą terytorialną Wielkopolski doby plemiennej. In: Z. Kurnatowska (ed.), *Słowiańszczyzna w Europie średniowiecznej* 1. Wrocław: Wydawnictwo WERK, 69–73.
- Witanowski, M. R. 1900:* Materiały do mapy archeologia przeddziejowa w „Słowniku Geograficznym Królestwa Polskiego i innych krajów słowiańskich”, Światowit. *Rocznik poświęcony archeologii przeddziejowej i badaniom pierwotnej kultury polskiej i słowiańskiej* 2, 143–145.
- Zakrzewski, Z. 1935:* Sprawozdania Państwowego Konserwatora Zabytków przedhistorycznych na okręg wielkopolski za lata 1927 i 1928, *Wiadomości Archeologiczne* 13, 279–283.
- Zamelska, K. 1995:* Grodzisko w Poniecu (stanowisko 1), woj. leszczyńskie. In: Z. Kurnatowska (ed.), *Z badań nad osadnictwem wczesnośredniowiecznym Wielkopolski południowej*. Poznań: PTPN, 9–81.