

The Formation of the Units of the Polish People's Army (1944-1945) in Eastern Poland. The LiDAR Evidence

Jakub M. Niebylski^a, Damian Stefański^b and Przemysław Wierzbicki^c

This article provides an overview of landforms that are remnants of military camps created during the formation of the Second Polish Army in the area of Łuków, Międzyrzec Podlaski and Radzyń Podlaski (East Poland) in 1944-1945. These landforms were discovered while conducting surveys for the construction of the S19 expressway and were further investigated for a comprehensive understanding. The focus of this article is on mapping and visualizing these structures and identifying individual military units at the division and regiment levels. The research was conducted using non-destructive prospection methods, utilizing publicly available LiDAR data obtained through the ISOK project, which scanned the Polish area. The identification of military units was based on existing literature, providing a framework for establishing specific connections. However, due to the level of detail in the descriptions, there are cases where clarity is lacking, leaving room for further historical study of the military activities during the discussed period. The article acknowledges that the limited scope necessitates omitting details regarding the internal organization of military structures, their connection to military instructions, and historical records of their construction and use.

KEY-WORDS: archaeology of modern conflicts, conflict archaeology, landscape archaeology, LiDAR, military camps, Second Polish Army, World War II

INTRODUCTION

LiDAR and publicly available satellite imagery are useful tools employed in archaeological research of modern settlement sites, especially in the context of military

^a Institute of Archaeology and Ethnology, Polish Academy of Sciences, Sławkowska Street 17, 31-016 Cracow (Poland); e-mail: jakub.m.niebylski@gmail.com; ORCID: 0000-0002-6507-6087

^b Archaeological Museum in Cracow, Senacka Street 3, 31-002 Cracow (Poland); e-mail: damian.stefanski@ma.krakow.pl; ORCID: 0000-0002-7203-6796

^c „Archeoplan” Pracownia Archeologiczno-Konserwatorska Przemysław Wierzbicki, Do Wilgi Street 20/5, 30-419 Cracow (Poland); e-mail: archeoplan.pw@gmail.com; ORCID: 0009-0007-2756-741X

installations (Zalewska and Kierszys 2015; Kobiółka 2017; Zalewska *et al.*, 2019; Niebylski 2020; Niebylski *et al.*, 2021; Zalewska and Kierszys 2021; Niebylski and Czarnowicz 2022; Szubski *et al.*, 2022). This study is based on the high-resolution data from the IT Country Protection System (in Polish: Informatyczny System Osłony Kraju, abbrev. ISOK), which ranges from 4 to 16 measurement points per square meter (Kurczyński *et al.*, 2014), and enables a detailed reconstruction of well-preserved structures. These data were applied during archaeological surface and reconnaissance surveys preceding the construction of the S19 expressway in the Lublin Province (Wierzbicki and Oleszczak 2021a; 2021b) revealing the presence of numerous distinctive landscape structures that intersect with the proposed route. A preliminary study of these structures (Stefański 2021a; 2021b) has already established a connection between them and the formation process of the Second Army of the Polish People's Army (abbrev. 2nd Polish Army, 2nd Army), which took place in the area of Łuków, Międzyrzec Podlaski, Radzyń Podlaski, Lublin Voivodeship and Siedlce, Masovian Voivodeship in the second half of 1944 and the beginning of 1945. This initial finding prompted a more extensive investigation, covering a broader area, which resulted in the identification of a significant collection of remnants that document this historical process (Fig. 1). While historical sources provide a relatively well-described account of the subject, the well-preserved landscape remains have the potential to provide additional valuable data.

2ND POLISH ARMY

At the end of World War II, as German troops were being pushed out of present-day Poland, the communist Polish Committee of National Liberation unified the Polish Army formed in the territory of the Union of Soviet Socialist Republics with the People's Army (Stępniewski 1962). This led to the creation of new military units, namely the 2nd and 3rd Polish Armies. The structure of the 2nd Army and its formation area in the Lublin region were outlined in the first order (No. 8/Org.) issued by the Supreme Command on August 20, 1944. The formation of the 3rd Army followed later, as per order No. 041 on October 6, 1944 (order No. 041 of October 6, 1944; Dideńko 1978).

According to the initial order, the 2nd Army consisted of four infantry divisions (5th, 6th, 7th, 8th), the 4th Sapper Brigade, the 33rd Independent Motorized Pontoon Battalion, the 3rd Independent Anti-chemical Defense Battalion, the 5th and 8th Independent Tank Regiments, the Independent Tank Regiment, the Independent Heavy Tank Regiment, the 9th Independent Anti-tank Artillery Brigade, and the

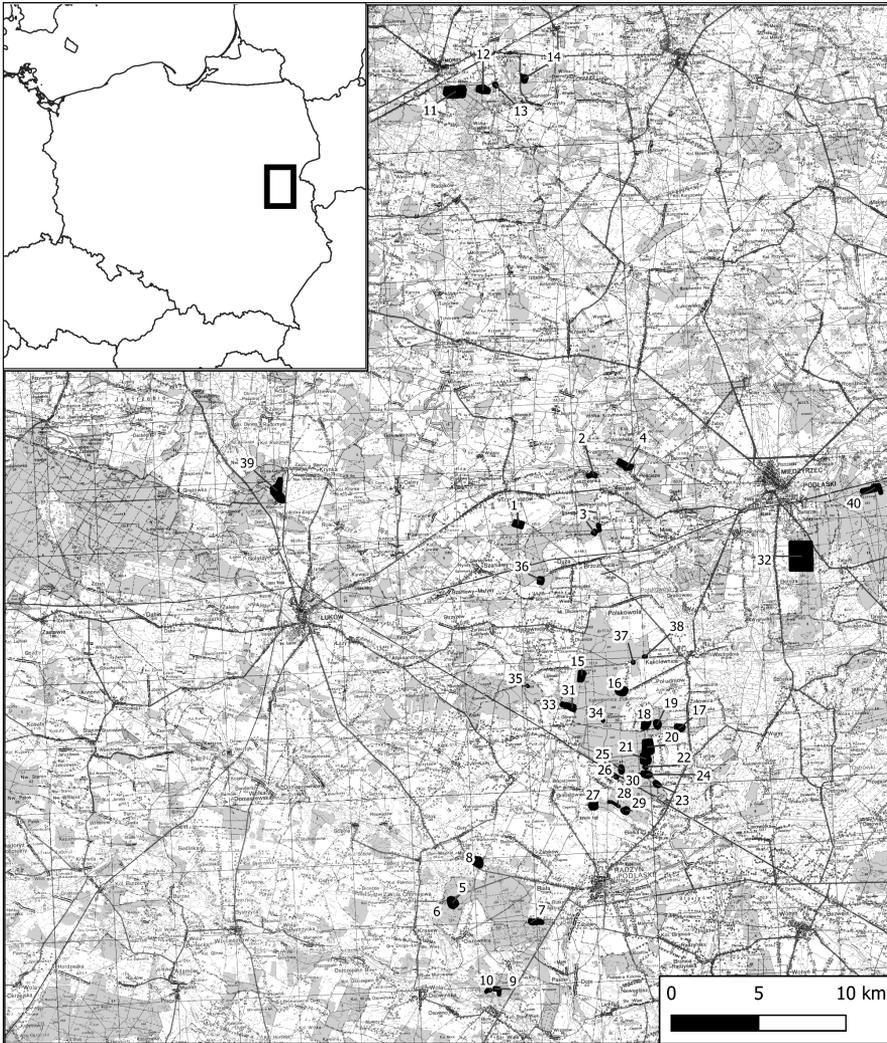


Fig. 1. The distribution of individual structures documenting the process of forming the 2nd Polish Army in the second half of 1944 and the beginning of 1945. Graph design: D. Stefański.

3rd Anti-aircraft Artillery Division. Annex No. 4 specified the establishment of an additional 9th Infantry Division (Stepniowski 1962; Ginalski and Wysokiński 1984). This unit consisted primarily of volunteers and conscripts born between 1921 and 1924, and the formation area was referred to as Lublin, Poland. Approximately 85%

of the soldiers were of Polish descent, while the commanders from battalion level and above were exclusively Russian soldiers (Szostak 2005). Residents were also recruited into these units (Geresz 2001).

The area in question had been liberated by the Red Army troops, who had entered Międzyrzec Podlaski on July 26, 1944 (Geresz 2001; Maraszek 2019) and established the quarters of the commander of the Russian 70th Army there. By the end of January 1945, the newly formed 2nd Army consisted of the 5th, 7th, 8th, 9th, and 10th Infantry Divisions, the 3rd Anti-aircraft Artillery Division, the 9th and 14th Anti-tank Artillery Brigades, and the 4th Sapper Brigade. The total number of soldiers and officers was approximately 60,000 (Szostak 2005). The commanders of the 2nd Army were Major General Karol Świerczewski and Major General Stanisław Popławski. At the time of its formation, the 2nd Army comprised 69,895 soldiers, including 44,685 regular corps soldiers, 16,807 non-commissioned officers, 290 cadets, and 8113 officers. The equipment at its disposal included 36,259 units of long guns, 1229 mortars and cannons, 7038 horses, 2875 cars and tractors, 22 armored cars, and 140 tanks and assault guns (Komornicki 1984). In late January 1945, the 2nd Army departed from the Lublin region to distribute Polish People's Army units more evenly across the country and secure the main lines of communication for the Red Army troops (Stępniewski 1962). Subsequently, in February 1945, it was redirected towards Pomerania, reaching the Gorzów Wielkopolski region in March. From there, it moved in a southeastern direction and was assigned to the 1st Ukrainian Front in the Berlin Operation, taking part in the Lusatian Operation. The 2nd Army later regrouped to form a southbound front with the Russian 5th Guards Army and participated in the Prague Operation against the German Army Group Centre (Kaczmarek 1978; Szostak 2005; Niebylski and Tunia 2018). After the end of hostilities, some subunits of the 2nd Army were engaged in fights with the Ukrainian Insurgent Army.

METHODOLOGY

The search for military features was conducted using a hillshade map from the portal.gov.pl online service – GEOPORTAL 2 Project of Polish Head Office of Geodesy and Cartography. These features were predominantly located in forest complexes, which facilitated and focused the prospecting efforts. Visualization was carried out using ISOK LiDAR scan data in the form of .laz files. Data processing involved software such as SAGA GIS, QGIS, and the Relief Visualization Toolbox (RVT). In the initial stage, the LiDAR data were reclassified based on land categories (2) and then gridded using the Natural Neighborhood Triangulation method with a resolution

of 0.25 meters. These files were subsequently converted to the GeoTiff format specific to the RVT program (Zakšek *et al.*, 2011; Kokalj and Hesse 2017). Various imaging methods were employed during the analysis, including multidirectional hillshade, Principal Relief Component, slope map, simple Local Relief Model, Topographic Position Index, and Local Dominance. These methods were tested to achieve optimal visualization, and ultimately, the Sky-View Factor visibility index was selected as the most useful. Figures were generated at scales of 10,000 to capture the entire structure and 2500 to highlight essential details. Depending on the size of the structure, either the first or second option was chosen for individual cases. The linkage of specific military units with individuals was accomplished based on descriptions of their dislocation. Published maps, such as those by Stępniewski (1962) and Gać (1971), proved to be particularly valuable in this regard. The probability of accurate interpretation is relatively high for the 5th and 7th Infantry Division units. However, due to the higher density of structures, it becomes more challenging and less certain for the 9th Infantry Division.

STRUCTURE OF THE 2ND ARMY

During the initial stage of the formation of the 2nd Army, the army consisted of 13,817 soldiers as of August 31, 1944. By October 1, the number had increased to 49,673 soldiers, and by January 1, 1945, it had reached 55,909 soldiers (Stępniewski 1962). Detailed data on the army's subdivisions, numbers, and armaments can be found in the report of the Chief of Staff of the 2nd Army, dated January 7, 1945 (Lewandowicz *et al.*, 1965). The commander's quarters and headquarters of the 2nd Army were initially located in Kąkolewnica, along with the area of the village of Polskowola. They were moved to this location on October 11 and 12, 1944, from Lubartów due to the increasing manpower and the dislocation of the 7th Infantry Division to the Radzyń Podlaski area (Geresz 2001). In Kąkolewnica, an airstrip for liaison aircraft was prepared, a field power plant was established for the electrification of buildings, and telephone communications with Lublin and division headquarters were established (Stępniewski 1962). During the period from fall 1944 to late January and early February 1945, the Information Branch, Field Court, and Staff of the 2nd Army were also stationed in Kąkolewnica.

5TH INFANTRY DIVISION

The 5th Infantry Division was established on July 5, 1944, in the Zhytomyr region (present-day Ukraine). From August 19 to September 2, it was located in the area

of the villages of Trzebieszów, Dębowierzchy, and Leszczanka (Wolski 1996). The headquarters of the 5th Infantry Division was situated in the village of Trzebieszów. Within the village, the regiment's headquarters, sick bay, certain special subdivisions, and senior officers were located. The eastern part of the village was occupied by the regiment's artillery (Ginalski 1974). The division's units established forest camps in the present-day Łuków District, constructing living dugouts that served various purposes. By September 20, most of the subsistence-related dugouts were completed, along with kitchens, bathhouses, laundries, guardhouses, warehouses, and stables. The identified structures in the area have been attributed to the 13th Infantry Regiment (Polish: 13. Pułk Piechoty, abbrev. 13pp; Fig. 2:1), 15th Infantry Regiment (15pp; Fig. 2:2), 17th Infantry Regiment (17pp; Fig. 2:3), and the 22nd Light Artillery Regiment (Polish: 22. Pułk Artylerii Lekkiej, abbrev. 22pal; Fig. 3:4). There were also other units present whose remnants in the terrain have not been identified, including the 1st Sapper Battalion stationed in Karwów, the 7th Vehicle Company stationed in Nurzyna, the 6th Self-propelled Artillery Squadron, and the 23rd Field Bath and 17th Field Laundry stationed in Trzebieszów.

7TH INFANTRY DIVISION

The 7th Infantry Division was dislocated in the region of Radzyń Podlaski from October 19 to 23, 1944. The division's headquarters and command were located in the Borki estate. The construction of dugouts in the area involved trenches boarded with wood. There were no specific guidelines given to the soldiers, resulting in variations in the design of the dugouts. The most common type of dugout was built to accommodate one platoon, or approximately 30 soldiers. These dugouts typically had 15 bunk beds made of planks, a stove, and a gun rack. In some companies, one large dugout was constructed to house the entire company of 120 soldiers, while another was built for headquarters, command, and storage purposes. The dugouts had doors and windows, which were covered with metal sheets, cardboard, or boards. Stoves for heating were often constructed using grease or gasoline barrels, as well as buckets. Besides living quarters, there were other functional structures such as field baths and disinfection chambers. The bathhouses followed a uniform plan with three rooms: the undressing room, the bathhouse, and the dressing room. They also served as saunas, equipped with stone furnaces that produced steam. The bathhouses were situated on slopes for water drainage. Disinfection chambers were wooden devices on a rectangular plan, measuring 1.9×1.6 meters and 1.9 meters in height, with a furnace. They were used to disinfect 20 sets of uniforms using a high-temperature iron stove

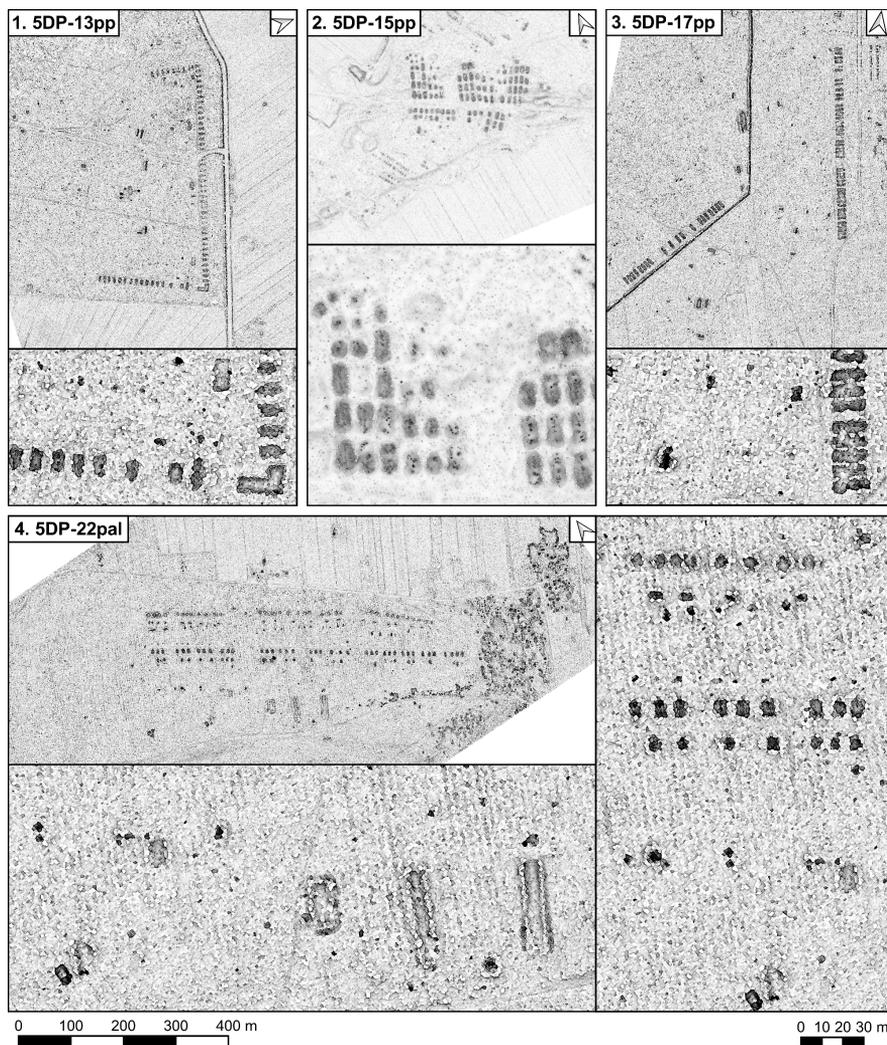


Fig. 2. The Sky View Factor visualisation of the 5th Infantry Division military camps west of Międzyrzec Podlaski, the numbers correspond to the designations in Fig. 1. Graphic design: D. Stefański.

or an oven made from a barrel of grease and oil. Pipes connected to the stove, and wooden grilles were placed above the clothes to limit contact with the stove. The construction work was completed within a span of 10 to 20 days. Additionally, air-raid trenches were dug in areas where troops were stationed, along with rear equipment

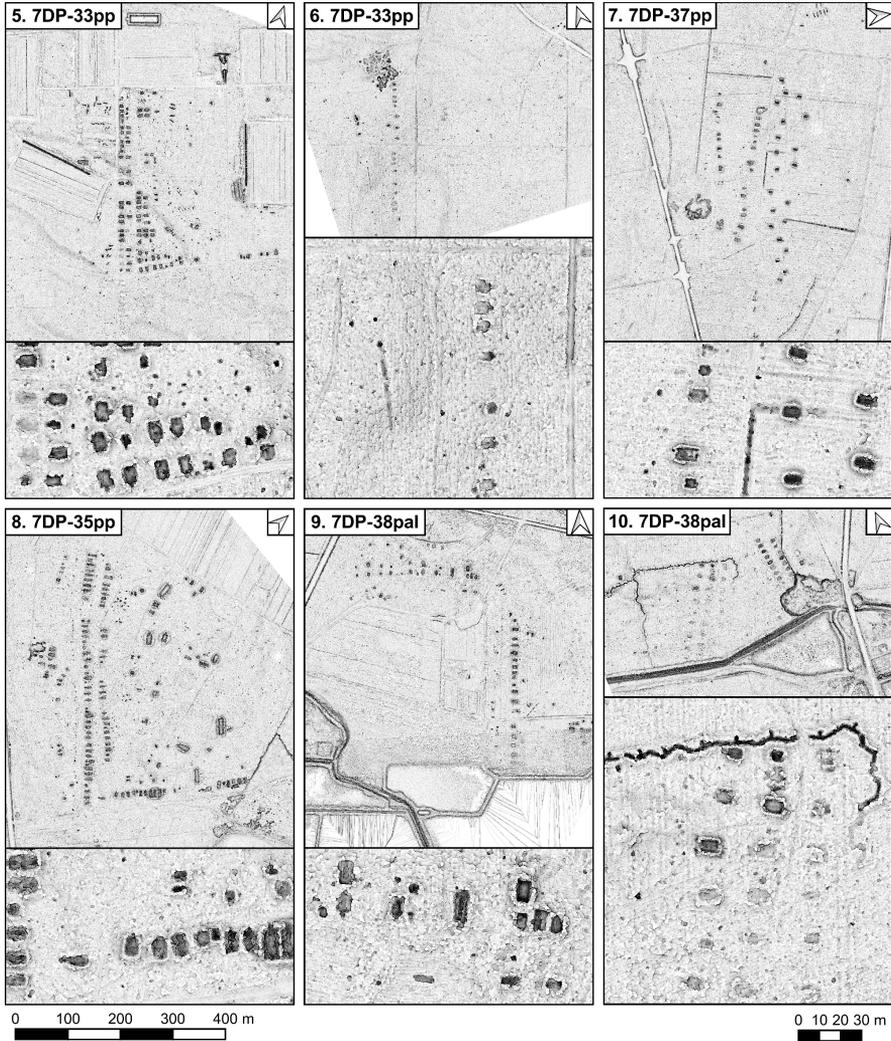


Fig. 3. The Sky View Factor visualisation of the 7th Infantry Division military camps west of Radzyń Podlaski, the numbers correspond to the designations in Fig. 1. Graphic design: D. Stefański.

(Gać 1971). The structures identified in the area have been attributed to the 33rd Infantry Regiment (33pp; Fig. 3:6, 7), 35th Infantry Regiment (35pp; Fig. 3:8), 37th Infantry Regiment (37pp; Fig. 3:7), and the 38th Light Artillery Regiment (38pal; Fig. 3:9, 10). Other units associated with the division that have not been identified in

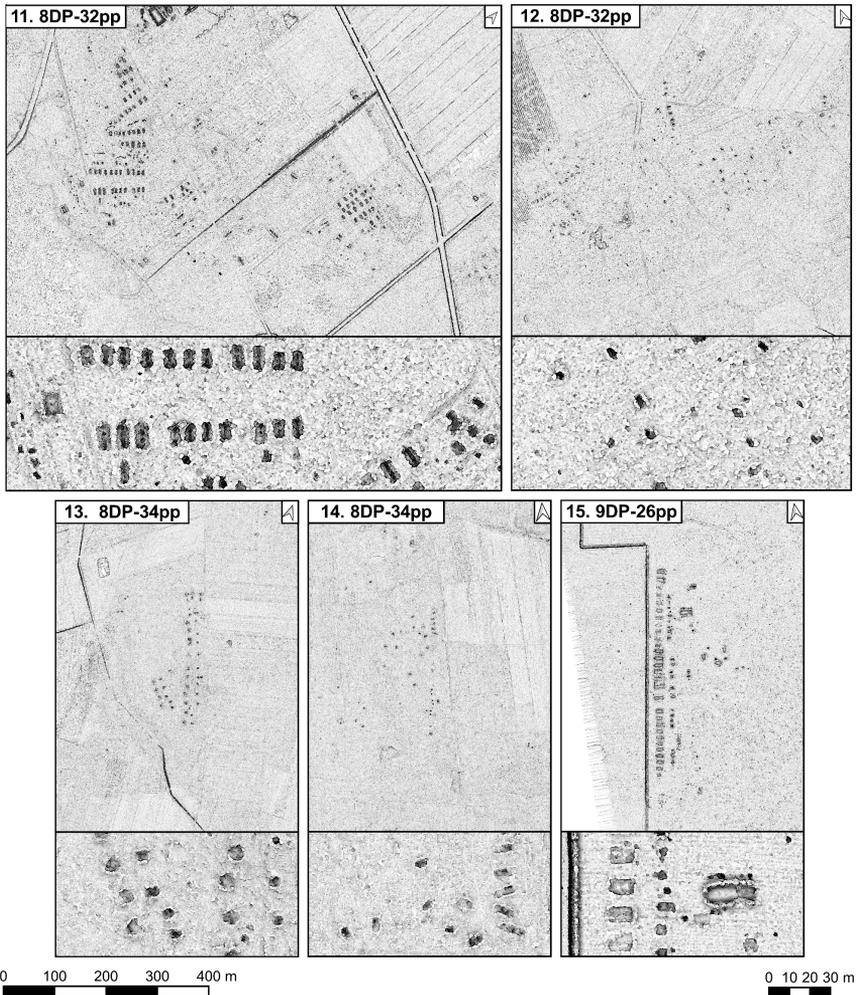


Fig. 4. The Sky View Factor visualisation of the 8th Infantry Division military camps east of Siedlce and 9th Infantry Division military camps southwest of Kąkolewnica, the numbers correspond to the designations in Fig. 1. Graphic design: D. Stefański.

the terrain include the 7th Independent Reconnaissance Company, 14th Independent Communications Company, and Communications Battalion stationed in the Borki estate. The Training Battalion was stationed in the forest southwest (or northwest according to other data) of the village of Paszki Małe, east of the village of Paszki

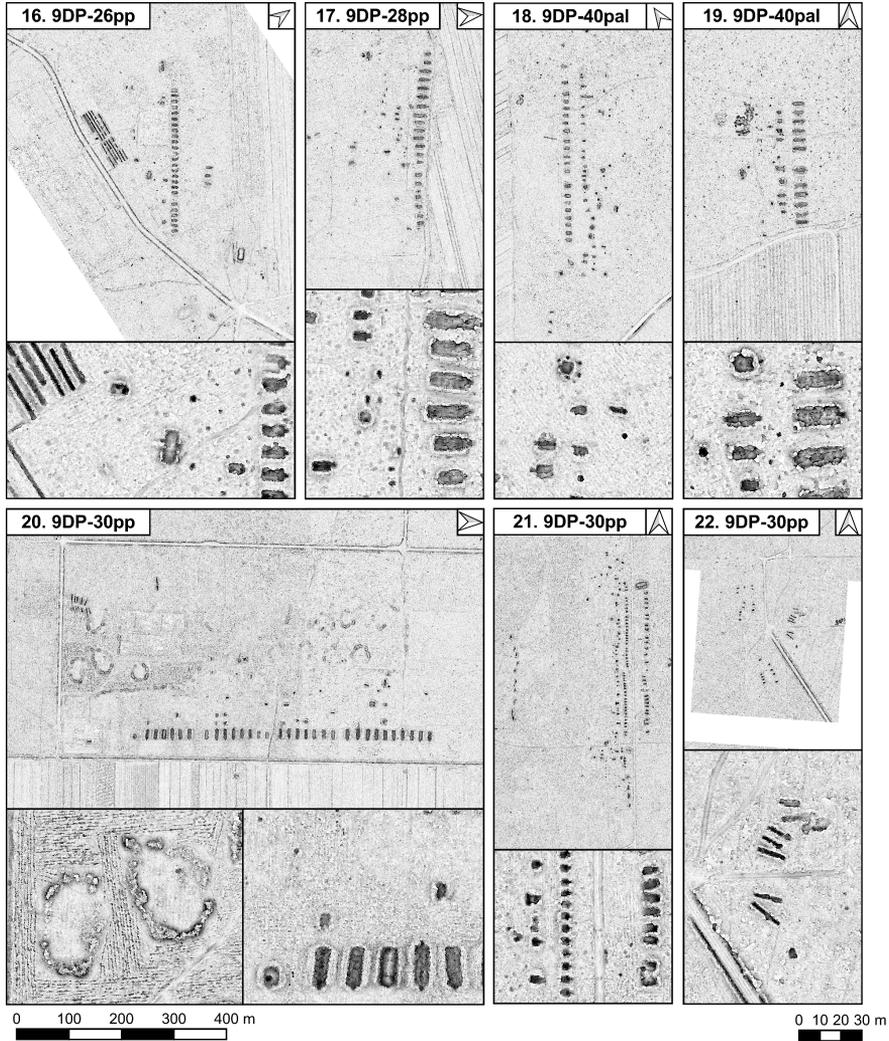


Fig. 5. The Sky View Factor visualisation of the 9th Infantry Division military camps southwest of Kąkolewnica, the numbers correspond to the designations in Fig. 1. Graphic design: D. Stefański.

Duże. The 18th Sapper Battalion was located in the village of Paszki Małe (or in the forest near the Pasięka forester's lodge, north of the Borki manor, according to other data). The 10th Independent Self-propelled Artillery Squadron was stationed north of the Wrzosów colony, in the forest north of the Borki manor (east of the 38th Light

Artillery Regiment). The Independent Medical-sanitary Battalion was stationed at the Olszewnica estate, and the quartermasters were stationed in the villages of Sitno and Zabiele. The 13th Independent Chemical Company was located in the village of Osowno, and divisional warehouses were situated in the village of Adamki.

9TH INFANTRY DIVISION

The unit, which was formed in Białystok, became part of the 2nd Army and was stationed in the region of Kąkolewnica from late autumn until its march to the front on January 28, 1945 (Ginalski 1964; Szkurtatowicz 2014). The Division's Headquarters was located in the village of Jurki. The forest camps accommodated a significant number of soldiers. The earthworks at the edge of the forest in Turów, which were constructed during that time, are still visible in the field today (Ginalski and Wysokiński 1984; Kospath-Pawłowski 1995b; Szczepaniuk 2014a; 2014b; Szkurtatowicz 2014). The soldiers constructed dugouts with improvements based on the mistakes made during the initial formation of their quarters. Most of the dugouts were large and housed one company of soldiers. They had two entrances and rows of bunk beds along the longer walls. Inside each dugout, there were separate rooms for weapons storage and the company commander. Since straw was not available, the soldiers used tent sheets, military coats, and spruce branches for bedding. Cast iron stoves or brick and clay ovens were built for heating. The window openings were covered with translucent greased paper since glass was not available, resulting in a semi-dark environment. The dugouts were also utilized for lectures on regulations, political classes, and weapons science. Construction of the camps was completed on December 10, and some of them were equipped with telephone connections to the headquarters. Wells were built where possible for water supply, while in other cases, barrels from neighbouring villages were utilized. Various other structures were constructed, including rooms for guards, inspection service, regulation car parks, regulation artillery parks, insulated stables for horses, kitchens, battalion baths, and warehouses. Infrastructure elements such as alarm yards and delineated district boundaries were also established in the area. The identified structures in the area have been attributed to the 26th Infantry Regiment (26pp; Fig. 4:15, 5:16), 28th Infantry Regiment (28pp; Fig. 5:17), 30th Infantry Regiment (30pp; Fig. 5:20–22), 40th Light Artillery Regiment (40pp; Fig. 5:18, 19), and the 5th Reserve Infantry Regiment (in Polish: 5. Zapasowy Pułk Piechoty, abbrev. 5zpp; Fig. 7:31, 33, 34). Undetermined remains of structures belonging to this unit have been documented south of the area occupied by the 30th Infantry Regiment (Fig. 6:25–30). Other units associated with the division, for which

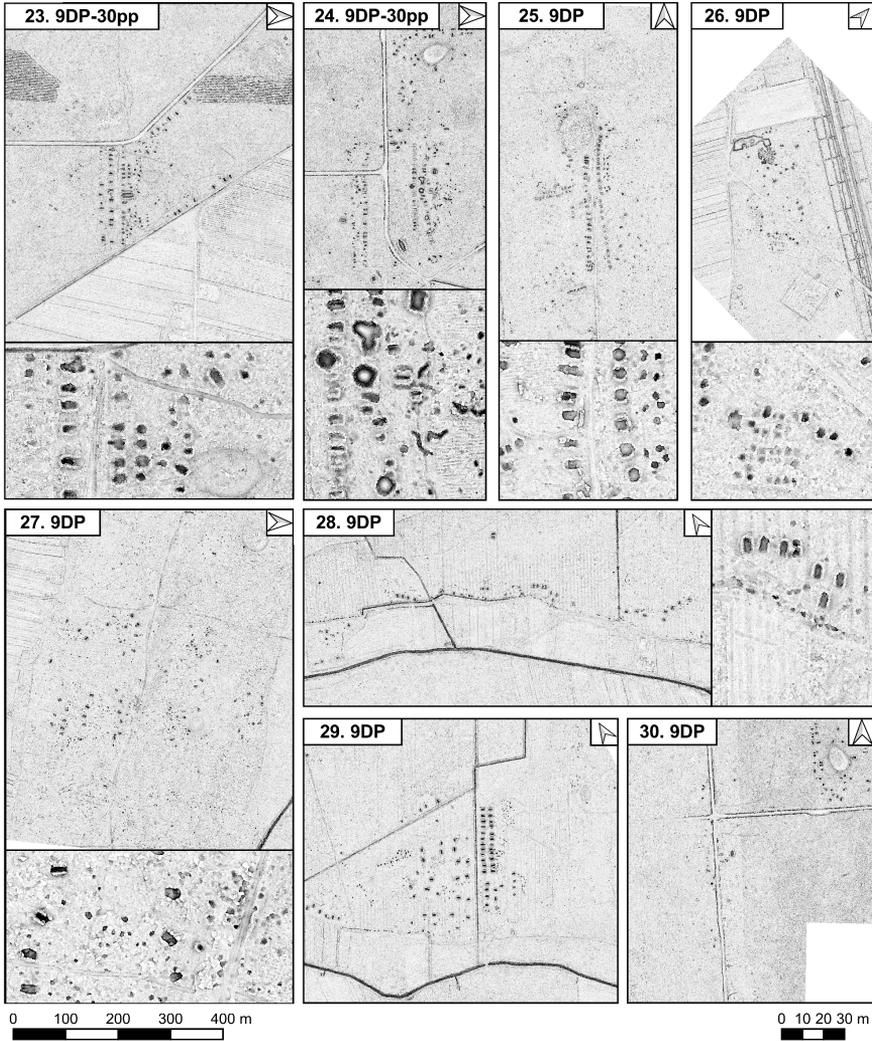


Fig. 6. The Sky View Factor visualisation of the 9th Infantry Division military camps southwest of Kąkolewnica, the numbers correspond to the designations in Fig. 1. Graphic design: D. Stefański.

landscape structures were not identified, include the Training Battalion stationed in the villages of Kobyłak and Krętawki (part of the village of Grabowiec), the 20th Sapper Battalion stationed in the area of the villages of Wagnanka and Rudnik (part of the village of Kąkolewnica), the 9th Reconnaissance Company stationed in the

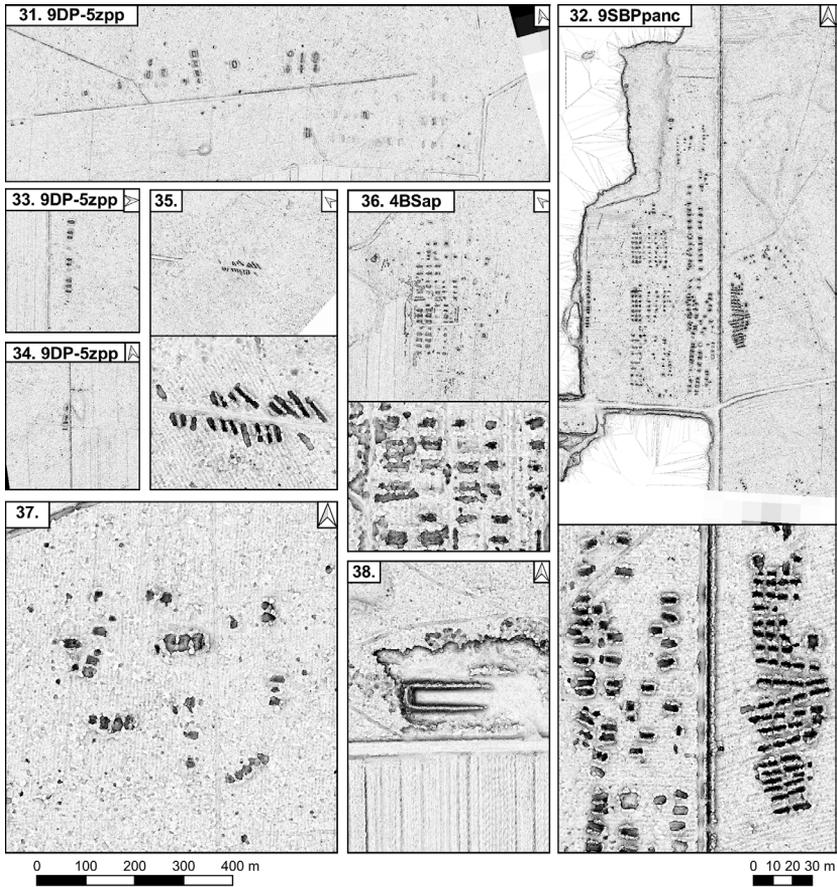


Fig. 7. The Sky View Factor visualisation of the 9th Infantry Division military camps southwest of Kałolewnica; 4th Sapper Brigade military camps southwest of Międzyrzec Podlaski and 9th Independent Anti-tank Artillery Brigade military camps southeast of Międzyrzec Podlaski, the numbers correspond to the designations in Fig. 1. Graphic design: D. Stefański.

area of the village Kruszyny (part of the village of Grabowiec), the 16th Communications Company stationed in the area of the village Grabowiec, and the 3rd Independent Airborne Communications Squadron in the area of the village Kownatki. The division's rear was located in houses north of the village of Starowieś (part of the

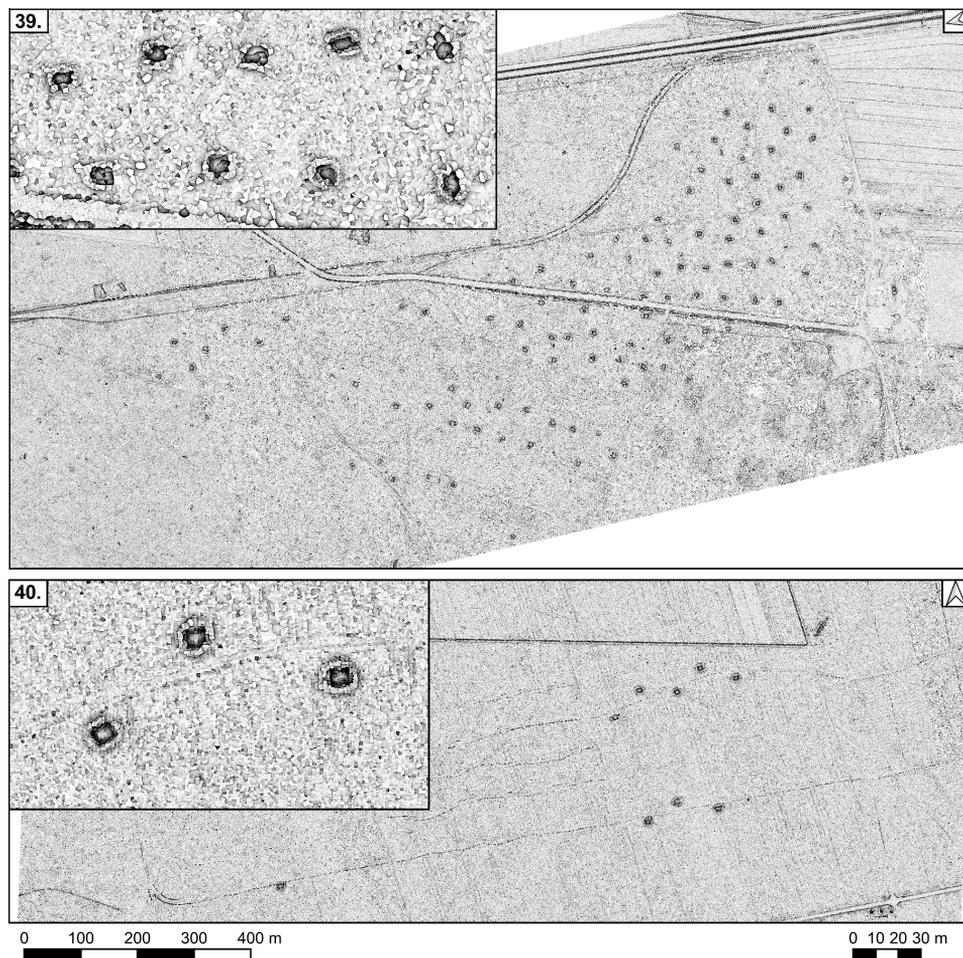


Fig. 8. The Sky View Factor visualisation of unidentified railroads and military camps, the numbers correspond to the designations in Fig. 1. Graphic design: D. Stefański.

village of Kąkolewnica), while other unnamed subdivisions of the division were positioned in the area of the village of Kruszyny.

OTHER UNITS

In addition to the mentioned units, the 2nd Army consisted of other large units such as the 8th Infantry Division, as well as smaller artillery, engineering, sapper, armoured, training, and logistics units (Ponahajba 1958; Stępniewski 1962; Lewandowicz *et al.*, 1965; Ways 1967; Płoński 1969; Malczewski and Polkowski 1970; Dideńko 1978; Komornicki 1987; Kospath-Pawłowski 1995a; Geresz 2001). However, many of these units were not recognized during the surveying process. The largest of these, the 8th Infantry Division, had only four identified features representing the 32nd and 34th Infantry Regiments in the area of Mordy (32pp, 34pp; Fig. 8:11–14). This could be due to the relative proximity to the city of Siedlce and the military unit that later operated there. Another significant feature was associated with the 9th Independent Anti-tank Artillery Brigade (in Polish: 9. Samodzielna Brygada Artylerii Przeciwpancernej, abbrev. 9SBPpanc; Fig. 7:32), and additional features were linked to the 4th Sapper Brigade (in Polish: 4. Brygada Saperów, abbrev. 4BSap; Fig. 7:32), which consisted of several sapper battalions and a reconnaissance company dislocated to the area of Duża Brzozowica, where the soldiers built numerous dugouts. In the study area, numerous small structures were also identified, but their interpretation was not clear. Some small structures in the forest west of the 9th Infantry Division's grouping were likely remnants of small detachments or training exercises (Fig. 7:35). Unusual groupings of features were also observed near railroad stations, particularly notable being the extensive structure near Wólka Świątkowa (Fig. 8:39) and a smaller one near the Sitno station (Fig. 8:40).

LANDSCAPE FEATURES AROUND THE “UROCZYSKO BARAN”

In Kałolewnica, there was a makeshift prison that began operating on October 23, 1944. The trials for the prisoners were held in the local school (Geresz 2001). Additionally, there were two People's Commissariat for Internal Affairs (in Russian: Нарóдный комиссариат внутренних дел [*Narodnyi Komissariat Vnutrennikh Del*]; abbrev. NKVD) camps and a Main Intelligence Directorate (in Russian: Главное разведывательное управление [*Glavnoye razvedyvatel'noye upravleniye*]; abbrev. GRU) agency in the vicinity of the village. The nearby village of Baran, also known as “Mały Katyń” or “Katyń Podlaski” is associated with the execution of individuals who were considered members of the Polish anti-communist resistance. It is estimated that between several hundred and around 1800 people lost their lives at this site (Magier 2008). Although imaging efforts conducted in the area did not uncover

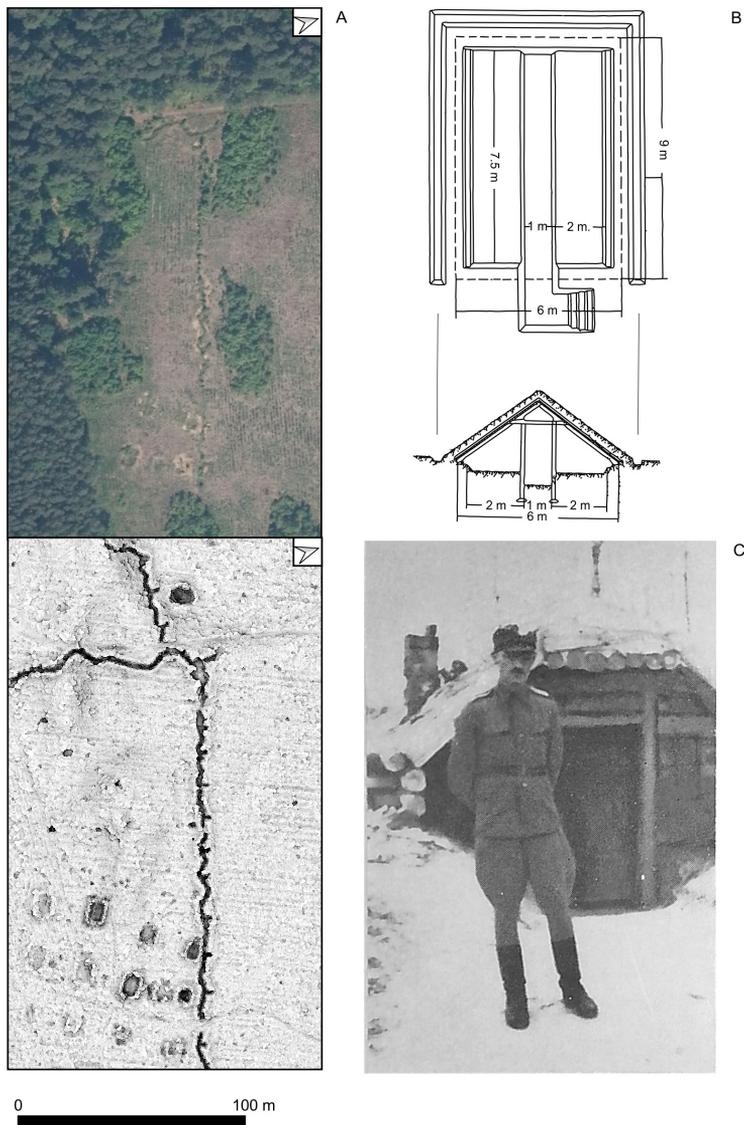


Fig. 9. A: Satellite and Sky View Factor view of 38th Light Artillery Regiment military installations of 7th Infantry Division at 51°43'56"N 22°31'16"E (Geoportal, October 13, 2023, <https://geoportal.gov.pl>); B: Schematic plan of a 20-person dugout, modified after Rudominer (1941, 82, Ris. 89, 83, Ris. 90); C: photo of staff dugout of 1st Battalion of 26th Infantry Regiment east of Lipniaki (9th Infantry Division, Fig. 4.15), December 1944 – January 1945 (Lubecki 1960, 49). Graphic design: D. Stefański.

traces indicating the presence of mass graves (Stefański 2021a), unspecified structures were found nearby. However, the field reconnaissance of these structures did not provide clear interpretations. Among them were a shooting range (Fig. 7:37) and a small set of dugouts (Fig. 7:36). While these structures are identified with the 2nd School Battalion (Stępniewski 1962), their potential connection with the prison described in the literature cannot be ruled out. Surviving witness accounts suggest that the prison cells were relatively deep dugouts, making their remains relatively easily recognizable. Given the absence of similar structures in the vicinity of Kąkolewnica, this hypothesis can be considered (Jadczak 1990).

SUMMARY

The purpose of this article is to bring attention to the concentration of military remains from World War II in the area. It is crucial because some of these remain collide with the planned route of the construction of the S19 expressway. Due to the limitations of this brief communication, many aspects regarding the internal organization of these military structures, their relationship to military instructions (Fig. 9B; e.g., Rudominer 1941) and historical records of their construction process and use (Fig. 9C) cannot be discussed in detail. However, since these topics are extensively covered in the written sources, the visualizations of these still clearly distinguishable structures (Fig. 9A) presented in this article can serve as a foundation for further research and exploration.

REFERENCES

- Dideńko, K. 1978. *Wojska inżynieryjno-saperskie LWP 1943–1945 (organizacja i działania bojowe)*. Warszawa.
- Gać, S. 1971. *7 Dywizja Piechoty. Historia 7 Łużyckiej Dywizji Piechoty*. Warszawa.
- Geresz, J. 2001. *Międzyrzec Podlaski. Dzieje miasta i okolic*. Międzyrzec Podlaski.
- Ginalski, E. 1964. *Byliśmy za Łabą. Z dziejów 28 pułku piechoty*. Warszawa.
- Ginalski, E. 1974. *22 pułk artylerii lekkiej. Zarys dziejów 1944–1947*. Warszawa.
- Ginalski, E. and Wysokiński, E. 1984. *Dziewięta drezdeńska. Z dziejów 9 Drezdeńskiej Dywizji Piechoty (1944–1947)*. Warszawa.
- Jadczak, S. 1990. Kąkolewnica. Ślady zbrodni. *Dziennik Lubelski* 17: 3–4.
- Kaczmarek, K. 1978. *Druga Armia Wojska Polskiego*. Warszawa.
- Kobiałka, D. 2017. Airborne Laser Scanning and 20th Century Military Heritage in the Woodlands. *Analecta Archaeologica Ressoviensia* 12: 247–270.
- Kokalj, Ž. and Hesse, R. 2017. *Airborne laser scanning raster data visualization: a guide to good practice*. Ljubljana.
- Komornicki, S. 1984. *Wojsko Polskie 1939–1945*. Warszawa.

- Komornicki, S. 1987. *Regularne jednostki Ludowego Wojska Polskiego. Formowanie, działania bojowe. Organizacja, uzbrojenie, metryki jednostek kawalerii, wojsk pancernych i zmotoryzowanych*. Warszawa. Wojsko Polskie. Krótki informator historyczny o Wojsku Polskim w latach II wojny światowej Tom 3.
- Kospath-Pawłowski, E. 1995a. 8 Drezdeńska Dywizja Piechoty im. Bartosza Głowackiego. In Z. Radzio (ed.), *8 Dywizja Piechoty w dziejach oręża polskiego*, 161–176. Pruszków.
- Kospath-Pawłowski, E. 1995b. 9. Drezdeńska Dywizja Piechoty w latach 1944–1947. In Z. Radzio (ed.), *9 Dywizja Piechoty w dziejach oręża polskiego*, 128–142. Pruszków.
- Kurczyński, Z., Stojek, E. and Cisło-Lesicka, U. 2014. Zadania GUGiK realizowane w ramach projektu ISOK. In P. Wężyk (ed.), *Podręcznik dla uczestników szkoleń z wykorzystania produktów LiDAR*, 22–58. Warszawa.
- Lewandowicz, L., Malczewski, J., Ponańhajba, L., Stawecki, P. and Wrzosek, M. 1965. *Organizacja i działania bojowe Ludowego Wojska Polskiego w latach 1943–1945. Wybór materiałów źródłowych. Tom 3*. Warszawa.
- Lubecki, L. 1960. *Na południe od Berlina. Z walk 26 pp*. Warszawa.
- Magier, D. 2008. *Codziennosc w cieniu sowietyzacji. Eseje z życia Radzyna Podlaskiego i okolic w latach 1944–1956*. Radzyń Podlaski.
- Malczewski, J. J. and Polkowski, R. L. 1970. *Regularne jednostki Ludowego Wojska Polskiego. Formowanie, działania bojowe. Organizacja, uzbrojenie, metryki jednostek inżynieryjno-saperskich, drogowych i chemicznych*. Warszawa. Wojsko Polskie. Krótki informator historyczny o Wojsku Polskim w latach II wojny światowej Tom 4.
- Maraszek, M. 2019. *Nasze dzieje. Międzyrzec 1390–2019*. Międzyrzec Podlaski.
- Niebylski, J. 2020. The remains of the “Battle of Kraków”, fought during World War I, as exemplified by site Sadowie-Kielnik 1, Kraków district. *Sprawozdania Archeologiczne* 72(2): 555–584.
- Niebylski, J. M. and Czarnowicz, M. 2022. Rola pozycji polowej z bitwy pod Krakowem z I wojny światowej odkrytej na stanowisku archeologicznym Wola Więclawska 10, pow. krakowski. *Raport Archeologiczny* 17: 73–118.
- Niebylski, J. and Tunia, K. 2018. The German-Russian Front in Southern Poland, Winter 1945: History and Archaeology. In K. Kleinová (ed.), *24th EAA Annual Meeting. Reflecting Futures*, 932–933. Barcelona.
- Niebylski, J. M., Czarnowicz, M. and Micyk, P. 2021. Bitwa pod Krakowem z 1914 r. w świetle badań archeologicznych stanowiska Zalesie 1, pow. krakowski, gm. Iwanowice. *Raport* 16: 103–167.
- Płoński, K. 1969. *W szeregach służby zdrowia 2 AWP. Ze wspomnień lekarza 2 Armii WP*. Warszawa.
- Ponańhajba, L. 1958. *Organizacja i działania bojowe Ludowego Wojska Polskiego w latach 1943–1945. Wybór materiałów źródłowych. Tom 1*. Warszawa.
- Rudominer, M. S. 1941. *Polevye neoboronitelnye postroyki. Nastavlenie dlia voysk Krasnoy Armii*. Moskva-Leningrad.
- Stefański, D. 2021a. *Opracowanie danych lidarowych w ramach badań powierzchniowych na trasie planowanej drogi ekspresowej S19 – odc. 3 Międzyrzec Podlaski (koniec obwodnicy) – Radzyń Podlaski*. Typescript in the archive of the General Directorate for National Roads and Motorways [Polish: Generalna Dyrekcja Dróg Krajowych i Autostrad].
- Stefański, D. 2021b. *Opracowanie danych lidarowych w ramach badań powierzchniowych na trasie planowanej drogi ekspresowej s19 – odc. 4 Radzyń Podlaski – Kock (początek obwodnicy)*. Typescript in the archive of the General Directorate for National Roads and Motorways [Polish: Generalna Dyrekcja Dróg Krajowych i Autostrad].
- Stępniewski, T. 1962. *Z dziejów 2 Armii Wojska Polskiego. Zarys formowania i organizacji*. Warszawa.
- Szczepaniuk, K. 2014a. Jurki. In P. Szkurtatowicz (ed.), *Szkice z dziejów Kąkolewnicy i okolic*, 240–243. Radzyń Podlaski.

- Szczepaniuk, K. 2014b. Turów. In P. Szkurtatowicz (ed.), *Szkice z dziejów Kąkolewnicy i okolic*, 245–254. Radzyń Podlaski.
- Szkurtatowicz, P. 2014. Lata wojny i okupacji (1939–1945). In P. Szkurtatowicz (ed.), *Szkice z dziejów Kąkolewnicy i okolic*, 67–119. Radzyń Podlaski.
- Szostak, J. 2005. 2 Armia Wojska Polskiego w operacji berlińskiej i operacji praskiej w 1945 roku. In Szafran, C. and Szostak, J. (eds), *Walki 1 i 2 Armii Wojska Polskiego na froncie wschodnim w końcowej fazie drugiej wojny światowej w Europie (styczeń-maj 1945)*, 43–58. Warszawa.
- Subski, M., Nieblyski, J., Gruzdź, W., Jakubczak, M. and Budziszewski, J. 2022. Modern flint mining landscapes and flint knapping evidence from the Kraków Gunflint Production Centre – What we know from LiDAR and field survey. *Sprawozdania Archeologiczne* 74(1): 247–268.
- Ways, W. S. 1967. *Regularne jednostki Ludowego Wojska Polskiego. Formowanie, działania bojowe. Organizacja, uzbrojenie, metryki jednostek artylerii*. Warszawa. Wojsko Polskie. Krótki informator historyczny o Wojsku Polskim w latach II wojny światowej Tom 2.
- Wierzbicki, P. and Oleszczak, Ł. 2021a. *Opracowanie wyników archeologicznych badań powierzchniowych, prowadzonych na odcinku planowanej drogi ekspresowej S19: odcinek 1 – granica województw lubelskiego – Międzyrzec Podlaski (początek obwodnicy) oraz odcinek 3 Międzyrzec Podlaski (koniec obwodnicy) – Radzyń Podlaski*. Typescript in the archive of the General Directorate for National Roads and Motorways [Polish: Generalna Dyrekcja Dróg Krajowych i Autostrad].
- Wierzbicki, P. and Oleszczak, Ł. 2021b. *Opracowanie wyników archeologicznych badań powierzchniowych, prowadzonych na odcinku planowanej drogi ekspresowej S19: odcinek 4 – Radzyń Podlaski-Kock (początek obwodnicy) oraz odcinek 6 – koniec obwodnicy Kocka i Woli Skeromowskiej – węzeł „Lubartów Północ”, bez węzła*. Typescript in the archive of the General Directorate for National Roads and Motorways [Polish: Generalna Dyrekcja Dróg Krajowych i Autostrad].
- Wolski, Z. 1996. *Łuków i Ziemia Łukowska. Kalendarium 1233–1994*. Łuków.
- Zakšek, K., Oštir, K. and Kokalj, Ž. 2011. Sky-View Factor as a Relief Visualization Technique. *Remote Sensing* 3: 398–415.
- Zalewska, A. I., Czarnecki, J. and Kierszys, G. 2019. *Krajobraz Wielkiej Wojny: Front nad Rawką i Bzurą (1914–1915) w świetle teledetekcji archeologicznej i źródeł historycznych*. Warszawa.
- Zalewska, A. I. and Kierszys, G. 2015. Sensing the material remains of the forgotten Great War in Poland. Sensibly or sensationally – The dilemma in front of presenting results of the Airborne Laser Scanning visualizations. In A. G. Posluschny (ed.), *Sensing the Past. Contributions from the ArcLand Conference on Remote Sensing for Archaeology*, 72–73. Bonn.
- Zalewska, A. I. and Kierszys, G. 2021. The forgotten Eastern Front: dealing with the social and archaeological legacies of the Battle of the Rawka and Bzura Rivers (1914–1915), central Poland. *Antiquity* 95(384): 1565–1583.

