Archaeology of the Bagicz forest, north-western Poland
Archeologia lasu w Bagiczu (północno-zachodnia Polska)

Abstract: The article presents results of the archaeological research in the Bagicz forest, NW Poland, based largely on non-invasive methods, with additional data obtained through excavation of two barrows of the Roman Iron Age Wielbark culture.

Keywords: non-invasive methods, barrow cemeteries, Wielbark culture, archaeology of forests, cultural landscapes

Introduction

Since the beginning of the 21st century archaeological research in forests and woodlands is becoming more popular than ever. The development of the research is directly related to invention, adaptation and popularization of the LIDAR technology. Due to the fact that c. 40% of Europe is covered by forests, it was merely an assumption of how much data was unavailable before the LIDAR (and more specific the Airborne Laser Scanning, ALS) has been introduced. During the last decade, the technology became cheaper and more accessible with numerous either state-funded or private initiatives leading to sharing of raw data. In Poland, the notable examples are the GUIK geoportal (<geoportal.gov.pl>) which grants access to an ALS-based imaging of the entire country (in a simplified version though) and the ISOK program, where the data from ALS scanning is available i.e. for research purposes for a reduced fee. These increasing opportunities of detecting landforms previously covered with dense vegetation led to a growing interest in woodland archaeology, which in Poland started in the 2010s.

The aim of this paper is to present the results of the research carried out in the Bagicz forest (Ustronie Morskie commune, Kołobrzeg district, West Pomeranian
voivodeship / NW Poland), an example of the woodland archaeology with its possibilities and limitations. As with many research projects, progress in methodology is interlocked with a theory. Thus we would like also to share some of our observations concerning the theory, especially seeing the Bagicz forest as a cultural landscape.

**Background: Area and History**

The present-day Bagicz forest has an area of over 15 km² (Figs 1 and 2). It is located in the eastern part of the Pomeranian Bay coast, which was deglaciated c. 16400–14900 cal BC (15000–14000 BP) (Mojski 2005, 267; Bellec, Diesing, Schwarzer 2010, 175). The dominating type of landscape here is a moraine upland formed in the Pomeranian Stage of the Vistulian Glaciation. The northern limit of the forest is a small marginal valley. The area of the forest is covered with small Pleistocene hills built of sands and gravels, as well as Holocene ravines and gullies, many of which connect several dead-ice kettle holes of various size, from few meters up to 1 km in diameter. Nowadays, both ice-marginal valley and kettle holes are filled with organic sediments (Dobracka 1988).

Before World War II, there were two discoveries made in the Bagicz forest. The first one was a deposit of bronze jewellery (Figs 3 and 4) found in 1925 during removal of a fallen tree in the forest. The deposit comprises a set of two pieces of necklaces, a fragment of a collar-shaped necklace, two complete and one piece of a greave as well as a kidney-shaped arm ring. It is dated to the Early Iron Age Hallstatt D period. It was part of the collection held in a local museum (Heimatmuseum Kolberg), although it was lost during or immediately after the war (Dibbelt 1935; Kostrzewski 1953, 201; Blajer 2001, 355; ADA MNS 523). At the other site, a fragment of a Late Neolithic or Early Bronze Age stone hoe of the East Prussian type (Fig. 5) was discovered, although it is unclear in what context or when it was found (ADA MNS 523).

The post-war history of the forest is strongly related to the nearby airbase in Bagicz which was established by the German Luftwaffe in 1935–39, and in 1945–92 it was a major base of the Soviet Air Force. Until 1992, the Bagicz forest was a closed zone, inaccessible for both local populations and researchers. The situation changed significantly after the end of the Cold War and subsequent withdrawal of the Russian Armed Forces from Poland after 1993. At this point the Bagicz forest became available for civilian population, which sparked first amateur research in the area. As an effect, a bronze sword (Figs 6 and 7) was found near a former forester’s lodge in Przylaski (Skrzypek 1998), on south-western edge of the forest. However, the conclusion was that the sword was found in a secondary deposit and in fact could originally be part of
an antiquity collection held in the lodge, thus it is unclear if it was related to
the prehistoric settlement of the area.

The modern interest in the area started in 2017, when a large concentra-
tion of small hills was identified in ALS-derivative images. This concentra-
tion was in the same year verified as a Roman Iron Age barrow cemetery Bagicz 22. At the same time a number of research questions was formed, including the cultural milieu of the cemetery. This also started a search for possible settlements related to the site and investigation on possible relations to the single grave of the so-called Bagicz Woman discovered on the nearby Baltic coast in 1898 (Wołągiewicz 1980; Chmiel-Chrzansowska 2019; Chmiel-Chrzansowska, Fetner 2020).

Methods

The presented results are an effect of several procedures, including an ALS
derivative map analysis, surveys and metal detector surveys, verification of the
archival record, verification of the information obtained from forest service
and local amateur historians, a magnetic survey, as well as two seasons of ex-
cavation carried out on the Wielbark barrow cemetery in Bagicz 22 (Chmiel-
-Chrzansowska 2018; 2019). However, the research was always focused on non-
invasive methods.

Sites

There are 10 archaeological sites known from the Bagicz forest. One of
them was registered before (the site with the aforementioned bronze sword
find), two are known from an archival record (Bronze Age deposit, stone hoe),
while the remaining seven were discovered in and after 2017. These new sites
will be presented here.

Bagicz 22

The Roman Iron Age Wielbark culture barrow cemetery was discovered in
2017. In 2017 and 2018, two barrows were excavated (Chmiel-Chrzansowska
2018). In addition to excavation, a magnetic survey, as well as an analysis of
detailed site plan based on ALS derivatives were carried out. As a result, 59
barrows were identified at the site. It is worth to mention though, that some of
the barrows were destroyed during building of a road crossing the site, as sug-
gested by some remaining mounds being cut in the process (Fig. 8). Therefore
it is probable that originally there were more barrows at the site.

Two barrows were excavated (Figs 9 and 10). Each of them had a single crema-
tion grave. The burial in barrow 1 contained pottery and a single bronze fibula,
clearly of Wielbark origin (Figs 11 and 12). Interestingly, the stratigraphy of barrow 1A suggests it was built atop of a small hill, possibly in order to make it bigger with less effort (Fig. 13).

According to the magnetometry survey, there are no anomalies that might suggest any stone structures inside the barrows. Numerous anomalies were detected between the barrows (Fig. 14), although their origin and function are hard to determine without test excavation (Wroniecki 2019).

Besides the Roman Iron Age materials, Middle or Late Maglemosian lithics (Fig. 15) were found in one of the excavated barrows. Most probably a Mesolithic concentration was destroyed by the Wielbark culture people during construction of the barrow. At the same time this is a strong suggestion for the presence of the Maglemosian hunter-gatherers.

**Bagicz 23**

The site was discovered during a survey in 2018. It contains remains of a stone cist of the Early Iron Age Pomeranian culture (Fig. 16). The cist was verified with a metal detector, as well as by skewer probing. Unfortunately, it appears to be empty; also remains of a typical urn with facial decoration are absent. There are numerous traces of illegal exploration with metal detectors in the area around the cist, therefore it is assumed that the grave was robbed relatively recently.

**Bagicz 24**

A single find of an iron axe (Fig. 17) was found during forest maintenance works and later reported to the archaeological team in 2018. The chronology was determined as late medieval period, c. 14th–15th century (Janowski, Chmiel-Chrzanowska 2019). The site was surveyed with a metal detector, with negative results. Similarly to other sites, the evidence of illegal metal detector exploration was present in this area.

**Bagicz 25**

This site is located in a forest tree nursery. During a metal detector survey in 2018 a single fibula made of bronze and iron was found (Fig. 18), as well as two pieces of pottery. The fibula was identified as Late Roman Iron Age Dębczyno group (Machajewski 1993, 32), while the pottery is impossible to identify. The function of the site is unknown.
Bagicz 26

The barrow cemetery discovered in 2018 during an ALS derivative analysis. It is located less than 1 km from Wielbark cemetery Bagicz 22 (Fig. 19). It consists of three large structures, possibly barrows, clustered in the main part of the site and one additional located around 200 m to the east. The survey did not reveal any artefacts on the surface of this site.

Bagicz 27

Another site discovered in 2018 during analysis of ALS derivatives is a barrow cemetery (Figs 20 and 21). At least 12 barrows of diameter 8–13 m were identified. The survey and metal detector survey led to the discovery of several items from World War II, including a Soviet Mosin-Nagant rifle. Two pieces of prehistoric pottery were found, which possibly may be related to the Late Bronze Age Lusatian culture.

Bagicz 28

The site was identified in 2018 during the analysis of the Google Earth images (Fig. 22) where a circular structure was spotted and later was verified with field prospections and a magnetometry survey (Fig. 23). The sizeable collection of surface finds consists of lithics, a single piece of pottery and a stone bead. The majority of lithics (products of the bipolar technique, soft and hard hammer flakes) are dated to the Neolithic or Bronze Age (Fig. 24), with a single core possibly related to the Late Palaeolithic Ahrensburg culture (Fig. 25). The cultural affinity of the pottery and the bead is unclear. The magnetic survey despite detection of numerous anomalies did not confirm the presence of the structure visible in the aerial image. A possible explanation of this fact may be the high iron content in the soil, which in turn could affect the results (Bahrycz, Niebieszczański 2019, 9). Unfortunately, further fieldworks at this site are impossible due to decisions made by the landlord.

The structure was initially identified as a Neolithic circular enclosure, although now it seems more probable that it is a remain of a Late Bronze Age fortification.

Discussion: The Bagicz forest as a cultural landscape and methods of research in a forest

The archaeological data suggest that the research area was settled since at least the Late Pleistocene. Of course, it does not mean continuous settlement, especially in the early periods. This also does not mean that the area was always
forested in the prehistory. However, early historical and cartographic data confirm its continuity in the historical periods. A notable example is the Kołobrzeg town charter from May 23, 1255. In this act duke Wartislaw III of Pomerania and bishop Herman von Gleichen of Kammin donated a large area of forest to the town of Kołobrzeg (Guzikowski 2005, 42). Remnants of this large forest complex are depicted on the Map of Lubinus from 1618 (Fig. 26). The map not only visualises the Bagicz forest as a dense woodland, but also as one of the very few forests in the Duchy of Pomerania to have its individual name (Pomeranian-German: Colbergischewald), suggesting its high importance for the local population. The name, although slightly changed (Modern German: Kolberger Stadtwald), survived until the end of World War II.

The long history of the Bagicz forest is obviously intertwined with human history, thus it should be regarded not only as a biome, or an element of environment, but also as a cultural landscape. The aforementioned town charter of Kołobrzeg points out, that at least since the Middle Ages the Bagicz forest has been actively shaped and maintained by the town inhabitants. This was mostly through a logging, a privilege given to the town, but also a protection of the forest as a significant asset. Presumably, one form of protection and preservation could be a maximum yearly limit of logging to avoid a complete deforestation of the area. Because the Kołobrzeg town charter clearly states that the Bagicz forest was donated mainly as a source of building materials (Guzikowski 2005, 42), it is also possible that the biome was actively modified, as some tree species are more useful as building materials than other. It is noteworthy that the oldest trees in the forest are few hundred years old oaks (e.g. Quercus robur Warcislaw and Boleslaw, the latter fell in 2016), which are known for their durability and usefulness for building, shipbuilding and carpentry.

It is also worth to consider the number of the archaeological sites discovered in the Bagicz forest. To fully understand why this number is so low we need to shortly explain the history of the nearby Bagicz Airbase. It was established in the 1930s by the German Luftwaffe, and after World War II it was a major airbase of the Soviet Air Force. Due to the strategic importance of the airbase through the period of World War II and the Cold War the area of the forest was an exclusion zone with limited access for both local population and researchers. It is significant that between 1925 and 1997 there was a gap in any discoveries in the area.

A substantial factor limiting the possibilities of site detecting is the forest itself. Intense vegetation is a serious limit to surveys and in some cases to accessibility of certain areas. This means that majority of the artefacts, especially in the case of the oldest periods, would be stray finds. This is exactly
the case with the Palaeolithic and Mesolithic finds in the Bagicz forest, where
the Ahrensburgian core was found during surveying of the circular structure
located at the ploughing field and few artefacts of Middle or Late Mesolithic
origin were acquired during excavation of a barrow (Chmiel-Chrzanowska
2018). It is obvious though, that at least single campsites of similar chronology
must have been functioning in the area, thus further finds of Stone Age activity
are expected.

Additionally, one of the most serious problems with the research in a forest is
detecting variety of flat sites. While use of ALS derivatives presents outstanding
possibilities in detecting and registering sites like barrows, ditches or even roads,
simple settlements and campsites are invisible due to their non-distinctive fea-
tures and limited possibilities of surface observation. Thus cooperation between
archaeologists and forest service is of crucial importance, and in the case of our
project led to discovery of new sites.

It is also obvious that the chronological description of the remaining barrow
cemeteries is impossible without significant invasive research. In the case of
the mounds it is often the grave itself that contains artefacts that are used for
identification of the culture and chronology of the site. This means a regular
excavation project, which may be problematic due to necessity of cleaning the
area of the trees. It is also contrary to the current trend to avoid excavation if
a site is not endangered.

The noteworthy issue of archaeological research in a forest is cooperation
with the State Forests, which for obvious reasons cannot be overlooked. In the
case of the Bagicz forest this cooperation is very good. An example may be the
case of site Bagicz 24, discovered during forest maintenance works and only
later reported to the archaeological team. Maintaining good relations between
scientists and administrators is also important for future research, as planned
logging will certainly open some areas for more research, both invasive and
non-invasive.

The last problem we would like to briefly discuss is heritage protection.
On one hand, the forest covers sites and makes them harder to detect. On the
other hand, when a place grants “invisibility” it tends to attract different forms
of illegal activities. In the case of the Bagicz forest an activity of illegal metal
detectorists seems to be a growing problem. Only in 2018, at least one barrow
at Bagicz 22 cemetery was almost totally destroyed by illegal “treasure hunters”
(Fig. 27), with number of square holes dug in other places within the site. This
is a serious problem and cannot be solved without the aforementioned coopera-
tion with State Forests.
Final remarks

All the remarks presented above point towards a conclusion that for most archaeologists a forest is more of an obstacle, than a potential cultural landscape or even a relic of history. This raised a question for us that if the Bagicz forest and its meaning is interpreted e.g. in the perspective of the Map of Lubinus, or the information that it was settled and actively shaped for few hundred years, then maybe it should be protected? The answer for this question is not an easy one because it cannot be transformed into a nature reserve which would diminish its anthropogenic nature. It would seem proper if the Bagicz forest was treated as a historical site, not only from the perspective of the presence of very old trees (e.g. two oak trees mentioned above, Bolesław and Warcisław), but also human presence within the forest. These two aspects interlock very tightly, the notable example being Bolesław oak tree which not only was a witness of the last few hundred years of history, but was also used by humans, which is evidenced by old marks of branch cutting. This makes it not only a monument of nature, but also an archaeological and historical source, and as such it should be protected not only by the environmental law, but also by the heritage protection law. This protection, however, would be extremely difficult due to multitude of aspects. On one hand for economic reasons a forest is constantly being re-built and actively managed. On the other, preventive monitoring of even such a small area is a serious problem, mostly due to the technical, as well as legal issues.

A forest, especially one with long and well documented history of settlement is therefore a valuable cultural landscape. It is also a living organism, with constantly ongoing biological and cultural processes. Because of this, woodland research by definition is interdisciplinary, with influences of both humanistic and environmental disciplines. Regardless of the period, both aspects are present and they mutually affect each other. The possibilities and limitations of the invasive and non-invasive research are in general universal issues with this kind of research. For that part, the Bagicz forest is similar to other woodlands being examined in recent years.

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Fig. 1. Map of the Bagicz forest. Numbers on the map match site numbers in the Bagicz area. After: Chmiel-Chrzanowska 2019, 14, ryc. 5

Fig. 2. LIDAR ALS image of the central part of the forest. Concentrations of barrows are visible: site 22 in the north and site 26 in the south. After: Chmiel-Chrzanowska 2019, 44, ryc. 33

Fig. 3. Bronze deposit from the Bagicz forest, original photographs. After: Dibbelt 1935, 35, Abb. 8 and 9
Ryc. 3. Skarb brązowy z lasu w Bagiczu, oryginalne fotografie. Za: Dibbelt 1935, 35, Abb. 8 i 9
Fig. 4. Bronze deposit from the Bagicz forest, details of the bronze jewellery. After: ADA MNS 523
Ryc. 4. Skarb brązowy z lasu w Bagiczu, detale wyrobów brązowych. Za: ADA MNS 523
Fig. 5. Stone hoe of the East Prussian type from the Bagicz forest. After: ADA MNS 523
Ryc. 5. Motyka typu wschodniopruskiego z lasu w Bagiczu. Za: ADA MNS 523
Fig. 6. Bronze sword from Przylaski: A – general view; B – ornaments and destructions in the upper part of the blade. After: Skrzypek 1998, ryc. 3.2 and 3.4

Ryc. 6. Miecz brązowy z Przylasek: A – widok ogólny; B – zdobienia i zniszczenia w górnej części głowni. Za: Skrzypek 1998, ryc. 3.2 and 3.4
Fig. 7. Bronze sword from Przylaski, drawing of details of ornaments and destructions in the upper part of the blade. After: Skrzypek 1998, 120, ryc. 3.5
Ryc. 7. Miecz brązowy z Przylasek, rysunek detali zdobień i zniszczeń w górnej części głowni. Za: Skrzypek 1998, 120, ryc. 3.5
Fig. 8. Bagicz 22, plan of the site based on an ALS. Note barrows destroyed during building of a road in the western part of the site. Barrow 1 excavated in 2017 is marked with a red circle. After: Chmiel-Chrzanowska 2018, 88, ryc. 4


Fig. 9. Bagicz 22, contour plan of barrow 1 (marked with a red circle) and 1A (located NW of barrow 1). After: Chmiel-Chrzanowska 2018, 88, ryc. 5

Ryc. 9. Bagicz 22, plan warstwicowy kurhanów nr 1 (oznaczony czerwonym okręgiem) i 1A (przy- legający do kurhanu nr 1 od północnego zachodu). Za: Chmiel-Chrzanowska 2018, 88, ryc. 5
Fig. 10. Bagicz 22, barrow 1 during excavation in 2017. After: Chmiel-Chrzanowska 2019, 30, ryc. 18
Ryc. 10. Bagicz 22, kurhan nr 1 podczas eksploracji w roku 2017. Za: Chmiel-Chrzanowska 2019, 30, ryc. 18

Fig. 11. Bagicz 22, grave covered with barrow 1. After: Chmiel-Chrzanowska 2018, 91, ryc. 9
Fig. 12. Bagicz 22, fibula from grave covered with barrow 1. After: Chmiel-Chrzanowska 2018, 90, ryc. 8

Ryc. 12. Bagicz 22, zapinka z pochówku pod kurhanem nr 1. Za: Chmiel-Chrzanowska 2018, 90, ryc. 8

Fig. 13. Section of barrow 1A, note the layer of palaeosol on which the barrow was constructed. After: Chmiel-Chrzanowska 2019, 31, ryc. 20

Ryc. 13. Profil kurhanu nr 1A, widoczna warstwa humusu pierwotnego, na którym znajduje się nasyp. Za: Chmiel-Chrzanowska 2019, 31, ryc. 20
Fig. 14. Bagicz 22, interpretation of anomalies noted between barrows, showing possible structures, e.g. graves. After: Wroniecki 2019

Fig. 15. Bagicz 22, lithics found in a secondary context during excavation of barrow 1. Their presence suggests destruction of an older site during construction of the barrow. After: Adamczyk 2018a, 2, ryc. 1

Ryc. 15. Bagicz 22, krzemienie znalezione we wtórnym kontekście podczas eksploracji kurhanu nr 1. Ich obecność sugeruje zniszczenie starszego stanowiska podczas budowy kurhanu. Za: Adamczyk 2018a, 2, ryc. 1
Fig. 16. Bagicz 23, stone cist of the Pomeranian culture. After: Chmiel-Chrzanowska 2019, 37, ryc. 26
Fig. 17. Bagicz 24, iron axe. After: Chmiel-Chrzanoska 2019, 39, ryc. 28
Ryc. 17. Bagicz 24, topór żelazny. Za: Chmiel-Chrzanoska 2019, 39, ryc. 28

Fig. 18. Bagicz 25, fibula made of bronze and iron. After: Chmiel-Chrzanoska 2019, 41, ryc. 30
Fig. 19. Bagicz 26, location of barrows. The constructions were marked with arrows. There is a single large barrow in the eastern part and three smaller in the western part. After: Chmiel-Chrzanowska 2019, 43, ryc. 32

Fig. 20. Bagicz 27, ALS image and visibility of barrows using different filters. After: Chmiel-Chrzanowska 2019, 46–48, ryc. 36–41

Fig. 21. Bagicz 27, site view. After: Chmiel-Chrzanowska 2019, 45, ryc. 34
Fig. 22. Bagicz 28, circular structure visible on a field. After: Chmiel-Chrzanowska 2019, 50, ryc. 43
Ryc. 22. Bagicz 28, okrągła struktura widoczna na polu. Za: Chmiel-Chrzanowska 2019, 50, ryc. 43
Fig. 23. Bagicz 28, magnetic anomalies on the location of the circular structure. After: Bahrycz, Niebieszczański 2019, 7
Ryc. 23. Bagicz 28, anomalie magnetyczne w miejscu występowania kolistej struktury. Za: Bahrycz, Niebieszczański 2019, 7
Fig. 24. Bagicz 28, soft and hard hammer flakes. After: Adamczyk 2018b, 5, ryc. 3

Fig. 25. Bagicz 28, Ahrensburgian core. After: Adamczyk 2018b, 2, ryc. 1
Ryc. 25. Bagicz 28, rdzeń ahrensburski. Za: Adamczyk 2018b, 2, ryc. 1
Fig. 26. Fragment of the Map of Lubinus from 1618. The Bagicz forest is east of Kolobrzeg, marked as *Colbergische wald*

Ryc. 26. Fragment Mapy Lubinusa z 1618 roku. Na wschód od Kolobrzegu widoczny las w Bagicz u oznaczony jako *Colbergische wald*.

Fig. 27. Bagicz 22, barrow destroyed during illegal treasure hunting. After: Chmiel-Chrzanowska 2019, 31, ryc. 19

Ryc. 27. Bagicz 22, kurhan zniszczony przez nielegalne poszukiwania skarbów. Za: Chmiel-Chrzanowska 2019, 31, ryc. 19
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Literature

Streszczenie
Artykuł prezentuje wyniki badań archeologicznych w lesie w Bagiczu (Polska północno-wschodnia) oparte w dużej mierze na metodach nieinwazyjnych oraz badaniach wykopaliskowych dwóch kurhanów kultury wielbarskiej. Od roku 2017 odkryto siedem nowych stanowisk, co wraz z trzema stanowiskami znanymi wcześniej daje w sumie 10 stanowisk archeologicznych na tym terenie. Chronologicznie obejmują one okres od schyłkowego paleolitu do średniowiecza.
Las w Bagiczu jest bardzo starym elementem środowiska, o długiej historii. Od dawna był on istotnym źródłem surowców i pożywienia, co znalazło wyraz we wzmiankach w dokumencie lokacyjnym Kołobrzegu. Uwzględnienie tego obszaru na Mapie Lubinus potwierdza jego duże znaczenie dla lokalnej ludności. Wydaje się więc, że las w Bagiczu powinien być uważany nie tylko za środowisko naturalne, ale także za krajobraz kulturowy.

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Summary
The article presents results of archaeological research in the Bagicz forest, NW Poland, based largely on non-invasive methods, with additional data obtained through excavation of two barrows of the Roman Iron Age Wielbark culture. Since 2017, seven new sites were discovered in the area, with three known previously, totalling 10 sites in the area. Chronologically, they cover almost all of the history of human presence in Pomerania, from the Final Palaeolithic up to the medieval period.
The Bagicz forest is an old biome, with a long history of human presence. Presumably it was an important source of resources for a long time, as stated by the town charter of Kołobrzeg. Its presence on the Map of Lubinus confirms its high importance for the local population. Considering this, it is suggested that the Bagicz forest should be regarded not only as an element of environment, but also as a cultural landscape.

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