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**First meetings?
The Late Mesolithic and the Linear Pottery culture
in Northeast Germany**

**Pierwsze spotkania?
Późny mezolit i kultura ceramiki wstęgowej rytej
w Niemczech Północno-Wschodnich**

Abstract: The article focuses on the early Atlantic period (c. 7,000–5,000 cal BC), when late foragers potentially met with early farming communities in Northeast Germany. It is likely that only a sparse Mesolithic population lived in the lowlands when Linear Pottery (LBK) farmers established at 5,300–5,200 cal BC. The LBK site Lietzow 10 provides rare evidence of direct contacts between the different populations. Early contacts can also be proven by isolated LBK pottery fragments on coastal sites.

Keywords: North European Plain, lower Oder, Late Mesolithic, Linear Pottery culture, neolithisation

Abstrakt: Artykuł dotyczy wczesnego okresu atlantyckiego (ok. 7000–5000 cal BC), kiedy łowcy-zbieracze potencjalnie mogli mieć kontakt z wczesnymi społecznościami rolniczymi występującymi w północno-wschodnich Niemczech. Możliwe, że gdy Niż Północnoeuropejski był kolonizowany przez ludność kultury ceramiki wstęgowej rytej (ok. 5300–5200 cal BC), jedynie nieliczna populacja mezolityczna zasiedlała ten teren. Stanowisko KCWR Lietzow 10 dostarczyło niezwykle rzadkich dowodów na bezpośrednią styczność pomiędzy różnymi społecznościami. Dowodami na wczesne kontakty mogą być również pojedyncze fragmenty ceramiki KCWR znajdowane na stanowiskach brzegowych.

Słowa kluczowe: Niż Północnoeuropejski, Dolna Odra, późny mezolit, kultura ceramiki wstęgowej rytej (KCWR), neolityzacja

Introduction

Some years ago Friedrich Lüth has initiated a new research on the Late Mesolithic and the neolithisation process in the southern Baltic. Fruitful cooperation of different disciplines started and the SINCOS project contributed important new information on the Litorina transgression of the Baltic Sea and on submerged Stone Age sites. In Wismar Bight and in the bays of Rügen island

excavations were conducted and promising field work was carried out at the peat bog site Dąbki in Pomerania to better understand the Late Mesolithic and the neolithisation process (e.g. Harff/Lüth 2010; Jöns *et al.* 2010; Jöns *et al.* 2020; Hartz *et al.* 2007; Kabaciński, Terberger 2011; Kabaciński *et al.* 2015). The new information also allowed to better address the contacts between late hunter-gather-fishers and early farming communities on the North European Plain (Terberger *et al.* 2009). At the same time workshops on the famous Osterf cemetery and Mesolithic burial rites of the north as well as the emergence of early pottery organised by Friedrich Lüth and partners pushed forward international discussion and provided considerable progress for the understanding of this time period (Larsson *et al.* 2010; Hartz *et al.* 2011a). The last years saw further progress (e.g. Terberger *et al.* 2018) and this is the background for a brief update on the earliest phase of the neolithisation process in northeast Germany.

Hunter-gatherer-fishers of the early Atlantic (c. 7,000–5,000 cal BC)

Because of the Litorina transgression coastal sites of the Boreal and early Atlantic period at the southern Baltic coast are difficult to access. Fortunately research of the SINCOs project provided completely new insights into sites close or near to the coast (Fig. 1). In the Wismar Bight it was possible to identify the early Late Mesolithic site of Jäckelberg-Huk dated to c. 6,200 cal BC at a depth of 8,5 m b.s.l. (e.g. Lübke 2004; Jöns *et al.* 2010). The site was located close to a fresh water lake of that time. Trapezoidal, rhombic and long triangular microliths assign the inventory of Jäckelberg-Huk to an early Kongemose phase (Fig. 2; Jöns *et al.* 2010, 156). Further sites were identified at a depth of 11 m b.s.l. (Jäckelberg-NNW) and 7–8 m b.s.l. (Jäckelberg-Orth), but only limited information was obtained at these submerged sites.

In the waters of Rügen island at Breetzer Ort a multilayered Mesolithic site was detected with the lower layer dated to c. 5,500 cal BC (Fig. 1; Jöns *et al.* 2010, 174). Even if the number of Late Mesolithic sites dated to before c. 5,000 cal BC is rather small the systematic surveys indicate that sites on lake shores and on former coastlines must have been frequent.

In the early Atlantic the society living at the southern Baltic coast was (still) culturally connected to southern Scandinavia. This is reflected by a few Late Mesolithic inland sites in Schleswig-Holstein of Kongemose character including regular blade and bladelet production showing handle core technology (Söderlind 2018). No recent studies on Late Mesolithic assemblages further east are available, but we can expect that sites between Jutland and the river Oder of that time (c. 6,400–5,500 cal BC) were related to the Kongemose tradition, too.

Important Mesolithic sites such as Duvensee (Herzogtum Lauenburg), Friesack 4 (distr. Havelland) and Rothenklempenow 17 at Randowbruch (distr. Vorpommern-Greifswald) show preferred locations of inland settlement at lake shores (e.g. Groß 2017, 31 pp., 123; Kabaciński 2009; Gramsch 2000; Terberger 2006). Sites or layers of the early Atlantic period are less represented. The well-known site Friesack 4 has a Late Mesolithic layer, but not of typical Kongemose character. We have to keep in mind, however, that raw material was of less quality further inland in Brandenburg and this has had considerable influence on the character of the flint assemblages. As Birgit Gehlen (2009, 370, 385) pointed out the Late Mesolithic is more diverse than it had been believed before. On the North European Plain, Late Mesolithic surface sites which are characterised by trapeze and long triangle microliths are regularly present, but without preservation of organic material more precise dating is difficult (e.g. Gramsch 1973; Breest, Veil 2001a, 220; Gerken, Nelson 2016; Ismail-Weber 2017).

A burial of a c. 50-year-old female individual was found at Rothenklempenow 17 in seated position on a dune close to the lake shore. Until today, the skeleton could not be directly dated and charcoal dates of the overlying find layer suggest a 7th millenium cal BC context (Schacht 1993; Schacht, Bogen 2001). The isolated burial is located at the settlement, while at Groß Fredenwalde (distr. Uckermark) located c. 60 km further south a completely different situation is present. The site on the prominent Weinberg was detected in 1962 and is known for a multiple burial (Fig. 3; Gramsch, Schoknecht 2003). Six individuals were discovered at that time (Jungklaus *et al.* 2016), belonging to two or more burials (Kotula *et al.* 2020). Since 2014 further interments close to the former burials could be identified and by now we are dealing with a minimum of eight burials and 12 individuals (Fig. 4; Terberger *et al.* 2015; Kotula *et al.* 2020; Terberger *et al.* in press). Except for a young male, all individuals date to c. 6,400–5,800 cal BC (Fig. 5; Kotula *et al.* 2020). Reservoir effects might have affected the results and the true dating of most individuals might be closer to the 8,2 ka cooling event (Kobashi *et al.* 2007; Matero *et al.* 2017). Among the individuals children from about 1 to 9 years old are represented by five. They suggest that no age selection of the buried individuals took place. The interments are grouped together with some of the adults being buried in a similar position and with flexed legs. We consider the Weinberg to be the burial site of a local group of hunter-gatherer-fishers and we see this as an argument for little residential mobility. It is expected to find connected settlement site(s) at the shore of the neighboring lakes. This idea is supported by $\delta^{13}C$ -/ $\delta^{15}N$ -values of the individuals that show regular consumption of aquatic resources (Terberger *et al.* 2015; 2018). Unfortunately, a (larger) Late Mesolithic site has not been found yet.

The position of the burial ground on the highest elevation of the area (Fig. 3) is interpreted as a denomination to the territory and the ancestors of this Mesolithic group. It suggests that in the early Atlantic period Late Mesolithic people were frequently present in water rich environments of Havelland, Uckermark and the Oder valley. No site with a comparable number of graves is known from the lowlands of northern Germany and the next parallels for such a burial site is present in southern Scandinavia and the eastern Baltic. At the site of Tågerup (Fig. 1; Scania, Sweden) some burials of about the same time period were documented (Karsten, Knarrström 2001). Further important burial sites of southern Scandinavia such as Skateholm are dated more recent (see Grünberg *et al.* 2016). A relationship to southern Scandinavia is supported by a decorated bone dagger with flint insets from Groß Fredenwalde found in 1962 which finds parallels in southern Scandinavia and more specifically in Tågerup burial 5 dated to c. 6,100 cal BC as well as in the eastern Baltic (Gramsch, Schoknecht 2003; Karsten, Knarrström 2001; Kotula *et al.* 2020).

In conclusion, during the early Atlantic period the area of the Lower Oder shows cultural connections to southern Scandinavia and probably to the eastern Baltic. The burial ground of Groß Fredenwalde suggests the establishment of more permanent settlements and territorial behaviour in the second half of the 7th millennium cal BC, hundreds of years before the advent of Linear Pottery farmers in this area. First aDNA studies assign the Groß Fredenwalde individuals (1962 / Ind. 1 and 3) to the indigenous forager population by the typical U5b haplotype (Terberger *et al.* 2015, 151). Work is in progress to further develop the genetic analysis of this group.

For the (Late) Mesolithic a very low population density of c. 0,05 to 0,1 person/km² is expected (e.g. Dörfler in press). If we consider an area of what is today Brandenburg with c. 29,500 km² we might deal with c. 1450–2900 individuals and in the Uckermark, a part of northern Brandenburg (c. 3050 km²) only 150–300 people (or even less) might have been present. The first farmers probably entered a landscape with only sparse Mesolithic occupation.

The early farmers of the Linear Pottery culture

There is increasing evidence that the early farming communities of the Linear Pottery culture (LBK) are genetically different to the late hunter-gatherers of Central Europe and the colonisation from southeastern Europe played an important role in the initial neolithisation phase (Bramanti *et al.* 2009; Haak *et al.* 2010; Hofmanová *et al.* 2016; Mathieson *et al.* 2018). It is a matter of debate to what extent the indigenous population was involved in this process. Recently some hunter-gatherer admixture could be detected already during the initial formation of the LBK (Nikitin *et al.* 2019).

The initial LBK phase was long dated to c. 5,500 cal BC, but new information is in favour of a more recent beginning of the LBK settlements in Central Europe at c. 5,400 cal BC (Fröhlich, Lüning 2017). Czekaj-Zastawny *et al.* (2020) pointed out that some of the earliest LBK pottery finds in southern Poland are from cave sites. This might be an indication of an initial phase with small mobile groups looking for suitable farming grounds.

At the northern border of the loess landscape the early LBK phase is known by well-established settlements such as Esbeck (distr. Helmstedt; e.g. Richter, Schwarz-Mackensen 2015). Further east in Kujavia the early LBK phase is also present with some sites (Pyzel 2009; 2021). Evidence for the expansion of the LBK to the lower Oder area was detected decades ago with northernmost sites less than 40 km distant from the Baltic Sea coast (Dorka 1939; Preuß 1998; Cziesla 2008). Some new sites of the LBK were discovered in the last 25 years during investor related archaeology (Fig. 1 and 6). More extended and detailed investigations, however, are limited to a few sites such as site Prenzlau 95 (Ismail-Weber 2017, 77).

Radiocarbon dates suggested a start of LBK settlement in northeast Germany around c. 5,200 cal BC (Heußner 1988; Weishaupt 2002). Recently, new data from the site Lietzow 10, Havelland, argue for an arrival of early farming communities in Brandenburg slightly earlier at 5,300–5,200 cal BC (see below; Jahns *et al.* 2018). For the end of the LBK the site Lietzow 2 provides a surprisingly late date of c. 4,650 cal BC (Uhl 2007), which is under debate (Bleckmann 2021). New information from the site, however, supports an end of the LBK at c. 4,800 cal BC (Bleckmann 2021). E. Cziesla (2008) discussed the LBK sites in the Havelland and lower Oder area and pointed out that typical LBK house structures as well as burial sites are missing and evidence for farming is limited. For the LBK sites, he suggested Mesolithic settlers who partly adopted the LBK lifestyle (Cziesla 2008; Mischka *et al.* 2016, 136).

Remains of cattle and cereals (einkorn and barley), however, were already mentioned by U. Heußner (1988) from the Zollchow site. More recently, for example at the LBK site Lietzow 10 in the Havelland, the presence of domesticated animals (cattle, pig and sheep/goat) and of emmer and peas was confirmed (Weishaupt 2012; Benecke, Hanik 2016). The latter provide the earliest reliably dated evidence of domesticated plants in Brandenburg (¹⁴C-dates from charred cereals, KIA 50344: 6,202 ±36 BP; KIA 49178: 6,326 ±29 BP; KIA 49179: 6,322 ±33 BP) (Jahns, Wolters 2021; Jahns *et al.* 2018).

There is an increasing number of LBK sites in the Havelland (Uhl 2007; Weishaupt 2012) and among them we see first remains of LBK houses at site Groß Behnitz and site Bredow 25 (Fig. 1; Uhl 2006; Ismail-Weber 2017, 77). About 75 km further south near Jüterbog in the Fläming area which is characterised

by sandy loess soils about 20 sites of the younger LBK were detected by surface finds. In the 1990s, air photos indicated first LBK houses and more recently geomagnetic surveys revealed a considerable number of LBK house structures (Mischka *et al.* 2016). Based on pile pits and typical long pits 17 house plans could be identified on site Jüterbog 36 and further west 44 structures on site Dennewitz 15. For site Bochow 13 a similar pattern can be deduced. The surface finds in the Fläming area suggest a dating of the sites from the earlier to the late LBK phase (Mischka *et al.* 2016, 137). In conclusion, the very limited evidence for house structures stated earlier was due to preservation conditions as well as lack of research. Today, the Fläming area can be interpreted as a typical LBK settlement cluster with house structures and small villages.

Considerable progress of research can also be mentioned for the northern periphery of the LBK further west. In Westphalia, new settlements and enclosures of the middle to late LBK can be mentioned as well as a first LBK cemetery (Becker *et al.* 2018; Pollmann 2012; 2015). New information is also available for Lower Saxony, where a LBK site close to Niedernstöcken (Fig. 1; distr. Nienburg) was identified c. 60 km north of the established LBK settlements in the Leine valley (Gerken, Nelson 2016; Gerken *et al.* in press). Preservation conditions are poor, but there is no doubt that we are dealing with a typical settlement in an area with suitable soil conditions. It is probably only a matter of time that further sites will be detected in this area.

In conclusion, during the LBK we see a crossing of the first border of expansion to the north. LBK farmers moved into the lowlands, and the “islands” in the Havelland, the Uckermark and further areas of the lower Oder region are showing typical LBK settlements with house structures and a fully developed farming economy. They settled where suitable soils for farming were available. At the same time, they adapted to the local conditions and sometimes “the close vicinity to water seems to have been of greater importance than the vicinity to fertile soils” (Ismail-Weber 2017, 91). It is no surprise that some LBK sites show considerable amounts of bones from hunted game and fish (Benecke, Hanik 2016).

First meetings

For a long time contacts of early farming communities and late hunter-gatherers have been proposed (e.g. Gronenborn 1997; Gronenborn 2009; Klassen 2004; Terberger *et al.* 2009; Cziesla 2015; Cziesla 2021; Rowley-Conwy 2014; Hofmann *et al.* in press). To better understand the potentials for such interaction, Late Mesolithic and LBK sites are often plotted together (e.g. Ismail-Weber 2017; Gerken, Nelson 2016). Such maps can show different natural requirements and settlement patterns of these societies, but sometimes maps

show close vicinity of the different sites. We should be aware, however, that the record of Late Mesolithic sites is affected by research activities and assemblages are often dated only based on typology. In many cases such maps can tell us little about true contemporaneity of late Mesolithic and early Neolithic sites (e.g. Gerken, Nelson 2016, 66). For the Late Mesolithic, a very low population density is proposed (see above) and we may ask: did early farmers and late Mesolithic hunter-gatherer-fishers really meet? This can be discussed on the basis of different evidence.

From the study area and neighbouring regions we know a few Mesolithic burials dated to about the period of the LBK. The burial of an adult individual found at Steinhagen (Fig. 1; distr. Rostock) was furnished with 11 perforated aurochs teeth. An AMS-date of c. 5,500 cal BC assigns the burial to some time before the first LBK settlements are present c. 150 km further east (Heußner B., Heußner K.-U. 1989; Schacht 1993; Bach, Bruchhaus 1994). The elevated $\delta^{15}\text{N}$ -value of the individual suggests regular consumption of aquatic resources and the radiocarbon age is probably overestimated by a fresh water reservoir effect (Terberger *et al.* 2018, Fig. 6). Haplotype U5b identifies the Steinhagen skeleton as a typical Mesolithic individual (see above), who probably had typical darker skin and blue eyes of the Mesolithic population (Jensen *et al.* 2019; Olalde *et al.* 2014).

The burial of Rathsdorf (distr. Märkisch-Oderland) was found near the Oder valley and is located only c. 30 km southeast of the next LBK sites (Fig. 1). The female individual buried with the upper body part in seated position is dated to c. 5,300 cal BC by a pine charcoal found close to a burial good (Ismail-Weber 2016). We have to await if this date can be confirmed by further evidence. The use of ochre and various burial goods such as perforated animal teeth pendants and a bone awl prove the Mesolithic character of the interment.

At Groß Fredenwalde, one of the burials (feature 1/4) is related to a younger phase. The remains of a young male individual dated to c. 4,900 cal BC were found in a mixed position and only the leg and feet bones were close to their original anatomical position. The man was probably buried in a more or less upright standing position and later the skeleton collapsed (Terberger *et al.* 2015). Burial goods such as flint blades, a small hammer stone and two bone points again demonstrate a clear Mesolithic context.

A further Mesolithic burial was found at Kolberg (distr. Dahme-Spreewald, Brandenburg) and two interments were detected on the Rollmansberg at Criewen (distr. Schwedt). They are related to the subsequent period. Kolberg (c. 4,750 cal BC) (Grünberg 2000) is dated to about the same period as the Criewen interments (burial 1: c. 4,600 cal BC; burial 2: c. 4,750 cal BC) (Geisler, Wetzel 1999). Consumption of fresh water resources of the latter two

is indicated by elevated $\delta^{15}\text{N}$ -values. We can expect some reservoir effect on the radiocarbon results and it is likely that the two interments date in fact younger (Terberger *et al.* 2018, 78). The aDNA-analysis of the Criewen individuals identified typical Mesolithic haplotypes (burial 1: U5b; burial 2: U4). The burials of Kolberg and Criewen testify the presence of a Mesolithic population in the water rich environments of Brandenburg during the 5th millennium cal BC, but they are not of relevance for the first phase of possible interaction during the LBK.

In conclusion, Mesolithic burials can be identified by varying rites, in some cases the use of red ochre, typical Mesolithic grave goods and a diet with regular consumption of fresh water resources. Mesolithic haplotypes (U5, U4) have repeatedly been identified for individuals. So far only the two Mesolithic interments of Rathsdorf and Groß Fredenwalde, burial 1/4, represent candidates for meetings with first farmers in the Havelland and Uckermark by their location and dating (c. 5,300–4,800 cal BC) (Fig. 6). In order to identify close contacts between late hunter-gatherers and first farmers core-DNA analysis can be helpful. While the skeleton of Rathsdorf is of poor preservation quality, the Groß Fredenwalde remains of burial 1/4 are well preserved. Ongoing aDNA-research by C. Posth (University of Tübingen) on this individual might show evidence of possible admixture or not around 4,900 cal BC. A Mesolithic skull from the coast at Drigge (Rügen island) is another candidate dated to c. 5,000 cal BC (Terberger 2001) which might tell us something on possible early admixture of the different populations. But for the moment the burials do not prove first meetings of foragers and early farmers.

Direct contacts can also be discussed on the basis of objects found in foreign context: Mesolithic objects on Neolithic settlements and vice versa. At the site of Lietzow 10 (distr. Havelland), the remains of a possible oven are preserved and here some LBK sherds together with trapeze microliths, a small axe, a microburin and two perforated animal tooth pendants of horse and red deer were found (Fig. 7; Hahn-Weishaupt 2014; Ismail-Weber 2017, 83). The latter finds are of Mesolithic character and for the first time objects of the indigenous population were found in undisputable LBK context in the Havelland. Fragments from the same feature are assigned to a Limburg vessel. This type of pottery is mostly present in the Rhine-Meuse area and in a few cases in Westphalia. It is normally found on LBK sites, but it is interpreted as a ceramic probably produced and used by Mesolithic groups of this area (e.g. Gronenborn 2009, 534; Cziesla 2015; 2021). If we follow this interpretation the following scenario might be suggested: at site Lietzow 10 LBK farmers met with individuals with Mesolithic roots (?) from >450 km to the West/Southwest and with local foragers. A high mobility of the late Mesolithic population and a rapid development

of contacts between the LBK farmers and the locals can be concluded. Ismail-Weber (2017) proposed an origin of the LBK settlers in the Havelland and Uckermark from different and distant areas as well as networks ranging from Westphalia in the west to Kujavia in the east and Bohemia in the south.

As Cziesla (2015, 237 pp.; 2021) pointed out specific flint projectiles indicate the adoption of Mesolithic technology in LBK context (see also Gronenborn 1997). Some further objects can be mentioned such as a few oblique transverse arrow heads, flake axes and T-shaped antler axes that “may be of northern origin” (Gronenborn 2009, 536). The same can be said for the fragment of an amber pendant and a bow fragment found in the well excavated at the LBK site of Erkelenz-Kückhoven (Rhineland) dated to the end of the 6th millennium cal BC (Weiner 1995; Terberger *et al.* 2009, 266). “Even bearing in mind that much interaction may have involved organic ‘forest products’, the number of items is surprisingly low” (Hofmann *et al.* in press).

It might be more promising to look for contact finds on Mesolithic sites (Terberger *et al.* 2009). As mentioned above an increasing number of coastal sites from the 6th/5th millennium cal BC were investigated by the SINCOS project. Among them is the site of Parow (dist. Vorpommern-Rügen) located at the Strelasund opposite Rügen island. In 2003, in a test trench two finds layers dated to c. 4,500 cal BC and 4,000 cal BC were identified (Jöns *et al.* 2010, 169; Terberger, Seiler 2004). A large number of dredged finds from the location of Parow was already collected in the 1980s. Among them was a small decorated fragment of a younger LBK vessel that typologically suggests a dating to c. 5,000 cal BC (Fig. 8; Mertens, Schirren 2000; Klassen 2004; Terberger, Seiler 2004). The next LBK settlements are situated c. 120 km to the southeast, but the decoration finds parallels in the Rhineland. Because the fragment is a stray find we have to be cautious with such unusual isolated evidence (Terberger *et al.* 2009, 272). Personal inspection of the fragment and the presence of a second fragment of stroke ornamented pottery from Parow (Fig. 8), however, support the reliability of the find location (Czekaj-Zastawny *et al.* 2012). A further fragment of a LBK vessel was found as a stray find at Rittermannshagen (Fig. 1; distr. Mecklenburgische Seenplatte) (Klassen 2004). Unfortunately, no context information is available for the find, but the water rich environment might fit to an expected Mesolithic context.

The only pottery fragments found in a reliable excavation context were documented at the site of Dąbki 9 located close to the Pomeranian coast (distr. Koszalin, Poland). On the basis of their shape and technology the ceramic fragments can be assigned to a late LBK pottery (c. 4,900 cal BC; Czekaj-Zastawny 2015; Czekaj-Zastawny *et al.* 2012; 2013). Next LBK settlements are present c. 200 km away and this is another example of distant contacts of the Late Mesolithic population.

Regarding exchange goods the most prominent objects are the rock stone axes normally made from amphibolite originating from northern Bohemia (Klassen 2004; Ramminger 2007; Nowak 2008). Many of them were collected as stray finds in the lowlands outside of the LBK settlement territory. A few of them were found on Late Mesolithic coastal and inland sites (e.g. Klassen 2004; Terberger *et al.* 2009; Hartz *et al.* 2011b; Gerken 2001, 180). Most of the stone axes are perforated and perforation is not present before the Middle Neolithic (Fig. 9). Accordingly, there is no clear evidence of such axes exchanged to forager communities during the LBK on Late Mesolithic sites and no axe depositions of that time are present in northeast Germany outside of the LBK area (Müller, Schirren in press). A possible exception of an unperforated Schuhleistenkeil of LBK origin on a Mesolithic site was reported from the Schletau site (distr. Lüchow-Dannenberg, Lower Saxony). The axe was found in the profile of a sand pit with some Mesolithic artefacts including a microlith from about the same level c. 0,7 m below ground surface (Breest 1988; Breest, Veil 2001b, 245). The find level, however, could not be directly dated and the typological evidence with triangles and no trapeze microliths vaguely points to a late Boreal to early Atlantic context. No findlayer of the late 6th millenium cal BC, the LBK times, seems to be present and the unperforated Schuhleistenkeil might be related to a younger context and have a Rössen origin (Breest 1988, 61).

The stone axes with reliable Late Mesolithic site context are dated from c. 4,850 cal BC on with earliest examples from Stroke Band pottery context (Klassen 2004; Hartz *et al.* 2011b, 45). As mentioned before, contacts to Stroke Band communities are also indicated by isolated pottery fragments from Ertebølle sites (Fig. 8:2; Czekaj-Zastawny *et al.* 2012, 541; Hartz *et al.* 2011b, Abb. 16). Perforated Schuhleistenkeile and Flachhacken considerably increase in number in the following centuries. At this time objects made of other materials such as Widaer Schiefer or the well-known decorated bone plate found at the Mesolithic site of Ralswiek-Augustenhof on Rügen island arrive on Mesolithic sites (Terberger *et al.* 2009). Among the goods related to the Mesolithic burial 1 at Ciewen mentioned above there is a mace head of marble. Similar objects are known in Rössen graves of Central Germany (Geisler, Wetzel 1999, 273) and this demonstrates direct contacts of inland Mesolithic individuals to the Rössen society at c. 4,500 cal BC (see above); such individuals are candidates for agents in the exchange process to the coast at that time.

Towards the end of the 5th millenium cal BC the presence of Neolithic items including exotic objects in the lowlands/on Mesolithic sites reflects increasing influence and interactions of the Mesolithic society to farming communities sometimes in far distant regions (Klassen 2004; Czekaj-Zastawny *et al.* 2011; Hartz *et al.* 2011b). This is the time when the neolithisation of the North European

Plain and southern Scandinavia entered a new and decisive phase of the neolithisation process under strong impact of the Michelsberg culture (e.g. Sørensen 2014, 264; Philippi *in press*; Terberger *et al.* 2018).

Conclusions

The Mesolithic population was probably very small, but the first farmers of Northeast Germany did not enter empty landscapes. Differences in the preferred environments and the perception of space by late foragers and first farmers can be expected. Case studies argue for complementary settlement patterns in different local areas with some overlapping settlement distribution (e.g. Stäuble, Wolfram 2013; Ismail-Weber 2017). We may expect initial scouting expeditions to unknown areas further north, and the Niedernstöcken site in Lower Saxony is a good example of expansion via waterways and recognition of fertile environments by early farmers (Gerken, Nelson 2016). East of river Elbe stable farmer exclaves like in the Uckermark and other areas of northeast Germany established in this process. Due to different economic exploitation strategies, first meetings between foragers and farmers may have been characterised by initial curiosity and interaction. The site Lietzow 10 is the only evidence of Mesolithic objects in a Neolithic context so far in northeastern Germany, suggesting direct personal contacts.

In the Uckermark, evidence of contemporaneity is attested by the latest Mesolithic burial from Groß Fredenwalde (c. 4,900 cal BC) and LBK settlements in the Prenzlau region. The next LBK site (surface collection) to Groß Fredenwalde is present c. 13 km north of Groß Fredenwalde. The unusual Mesolithic burial apparently resumed a burial tradition on the site after c. 900 years. This might be interpreted as a revived Mesolithic territorial symbolism as a reaction to early farmers increasingly establishing their presence.

So far there is no indication of any hostile encounters of late foragers and LBK farmers in the Havelland and lower Oder region (see e.g. Golitko 2015). Taking into consideration subsequent evidence of both Late Mesolithic and some Neolithic sites both lifestyles existed parallel for a considerable time. Site Dąbki 9 close to the Baltic Sea provides evidence of diverse contacts between farmers and foragers without changes of the economy. In the lowland of northern Germany, Mesolithic lifeways also existed until the end of the 5th millennium cal BC (e.g. Kotula *et al.* 2015; Hartz *et al.* 2011b, 57; Terberger *et al.* 2018). In conclusion, the period of the LBK was the time of first, sporadic contacts with probably little or no impact on the forager communities. This changed from c. 4,850 cal BC on and resulted in regular interaction between the different groups reflected by various imported objects including pottery (and their contents) sometimes from far distant regions.

There is increasing evidence for the strong impact of Michelsberg (west) and Lengyel communities (east) on Central Europe and finally the Northern Plain during the phase of neolithisation in the late 5th millennium cal BC (Klassen 2004; Czerniak, Pyzel 2019; Philippi in press).

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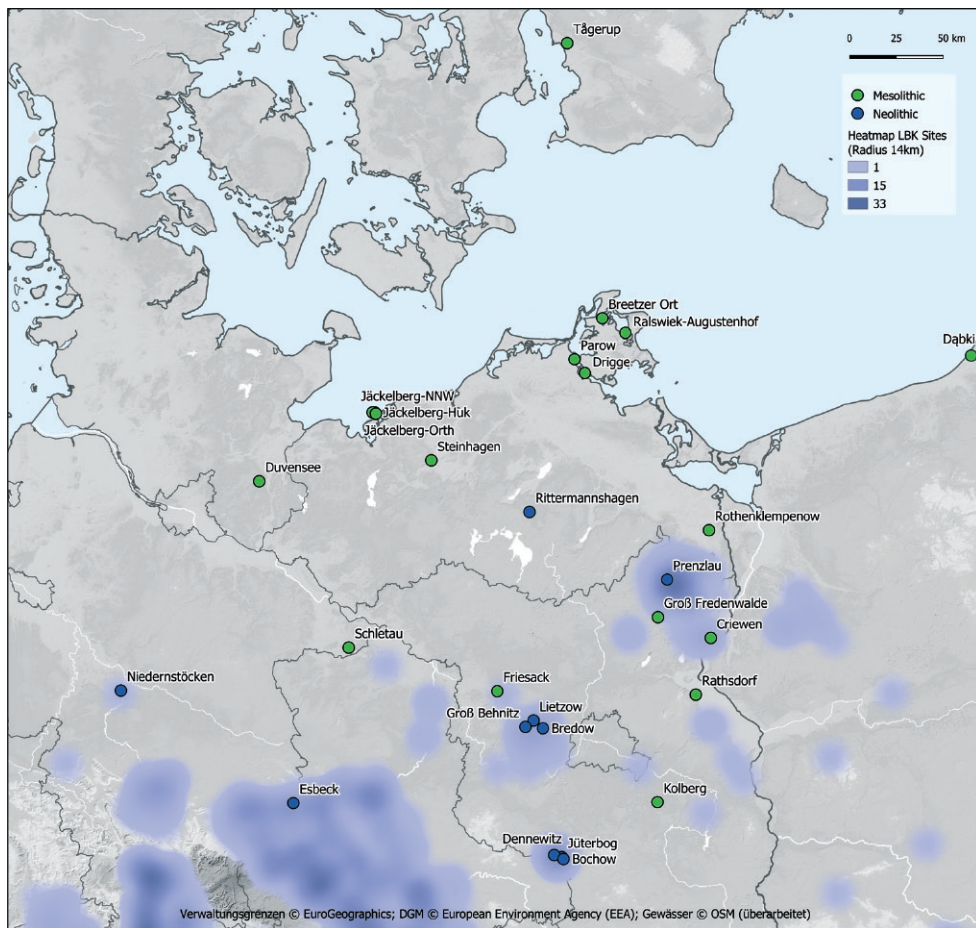


Fig. 1. Sites discussed in the text and LBK settlement areas (data after: BLDAM; LDASA; Preuß 1999; Saile 2009; Czieśla 2008; Czerniak *et al.* 2016 and additions). Prepared by A. Kotula, A. Srbzesny

Ryc. 1. Stanowiska wspomniane w tekście oraz obszary występowania osadnictwa KCWR (źródła danych: BLDAM; LDASA; Preuß 1999; Saile 2009; Czieśla 2008; Czerniak *et al.* 2016 z uzupełnieniami). Oprac. A. Kotula, A. Srbzesny

cal BC (approximately)	Denmark	German Baltic Coast	NE Germany (Brandenburg)	Radiocarbon Years BP		
3500–3800	Oxie	early TRB	Satrup/Siggeneben Süd	4800–5000		
3800–4000	Volling/Svaleklint		Wangels/Flintbek			
4000–4100	Late Ertebølle	Ertebølle	Timmendorf	5000–6000		
4100–4200						
4200–4300			Rössen/ Brześć Kujawski		Friesack- Boberg	
4300–4450					Late Ertebølle	
4450–4750	Early Ertebølle (aceramic)	Ertebølle	Jarbock	6000–7000		
4750–4900			Rosenfelde		SBK	
4900–5100			Jäckelberg		LBK	Early Ertebølle (aceramic) ?
5200–5100						
5500–5200						
5500–6500	Kongemose		Kongemose / Late Mesolithic (Trapezes)	7000–7700		

Fig. 2. Chronological chart with archaeological periods in Denmark, the southern Baltic coast and northeastern Germany (Brandenburg): green – Mesolithic; blue – Neolithic (modified after: Jöns *et al.* 2020). Prepared by A. Kotula

Ryc. 2. Schemat chronologii i periodyzacji w Danii, na południowym wybrzeżu Bałtyku oraz w Niemczech Północno-Wschodnich (Brandenburgia): kolor zielony – mezolit; niebieski – neolit (za: Jöns *et al.* 2020). Oprac. A. Kotula



Fig. 3. Groß Fredenwalde. Location of the Mesolithic burial site (red star) on the Weinberg. View to the southwest with lake Sabinensee in the background. Photograph by J. Wacker
Ryc. 3. Groß Fredenwalde. Lokalizacja mezołitycznego cmentarzyska (czerwona gwiazda) na wzgórzu Weinberg. Widok w kierunku południowo-zachodnim, z jeziorem Sabinensee w tle. Fot. J. Wacker

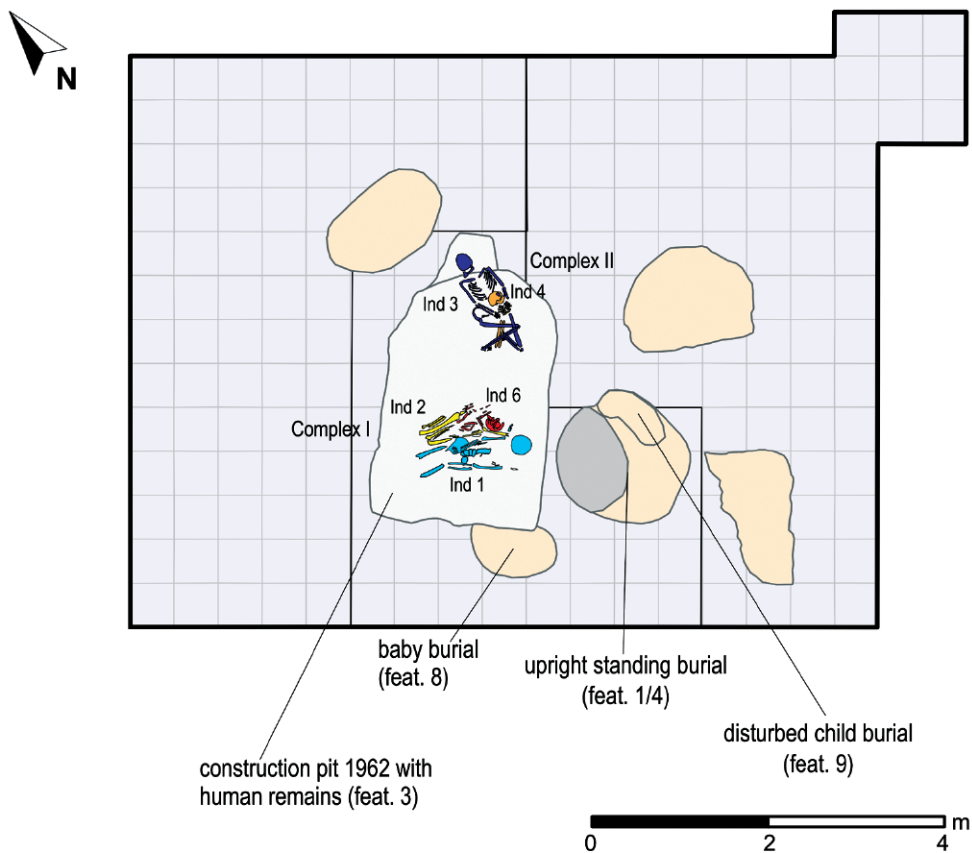


Fig. 4. Map of the burials at Große Fredenwalde. Note the construction pit of 1962. Prepared by A. Kotula

Fig. 4. Plan stanowiska Große Fredenwalde. Uwagę zwraca jama z konstrukcją zarejestrowana w 1962 r. Oprac. A. Kotula

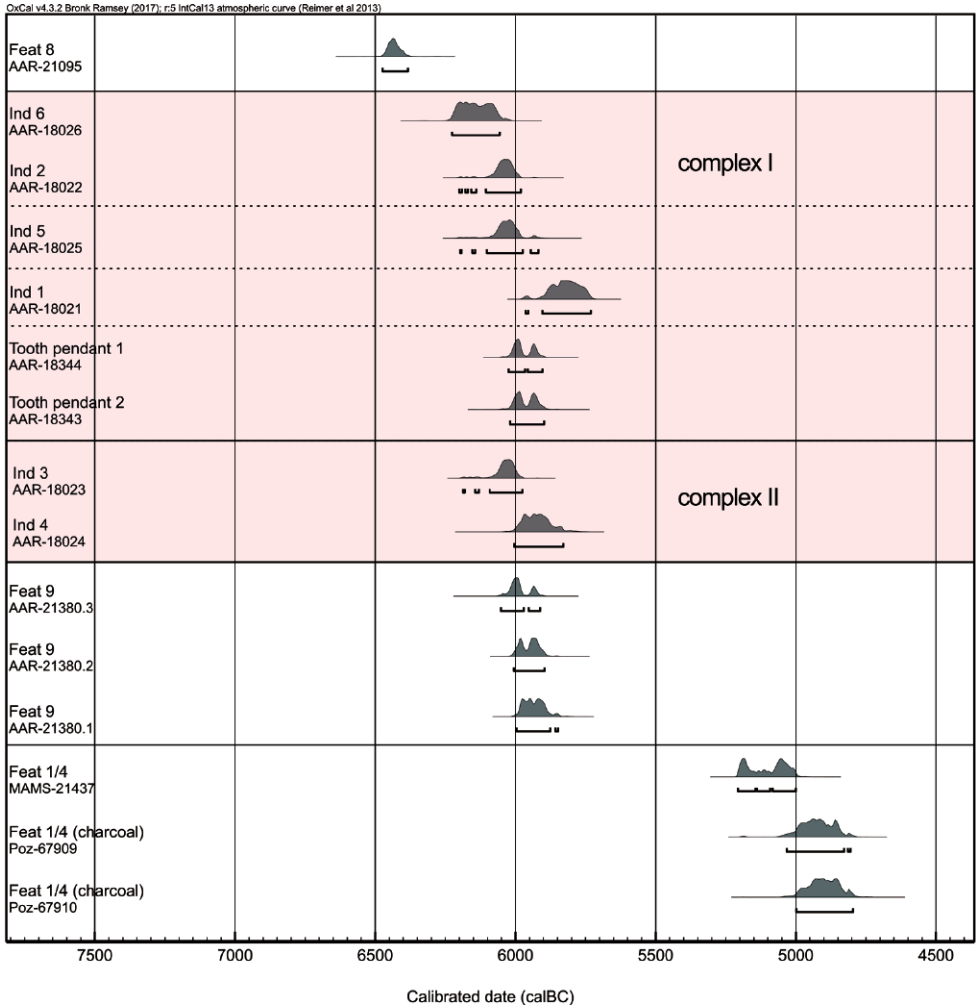


Fig. 5. Radiocarbon dates of samples from the Mesolithic human individuals and two tooth pendants (grave goods) recovered at Groß Fredenwalde found during two-day construction work in 1962 (complex I and II coloured in red) and remains found more recently (Features 8, 9 and 1/4). Prepared by A. Kotula

Ryc. 5. Wyniki radiowęglowego datowania próbek pobranych ze szczątków ludzkich oraz dwóch zawieszek z zębów (dary grobowe) z Groß Fredenwalde znalezionych podczas dwudniowych prac budowlanych w 1962 r. (kompleksy I i II oznaczone kolorem czerwonym) oraz ze szczątków odkrytych niedawno (obiekty nr 8, 9 i 1/4). Oprac. A. Kotula

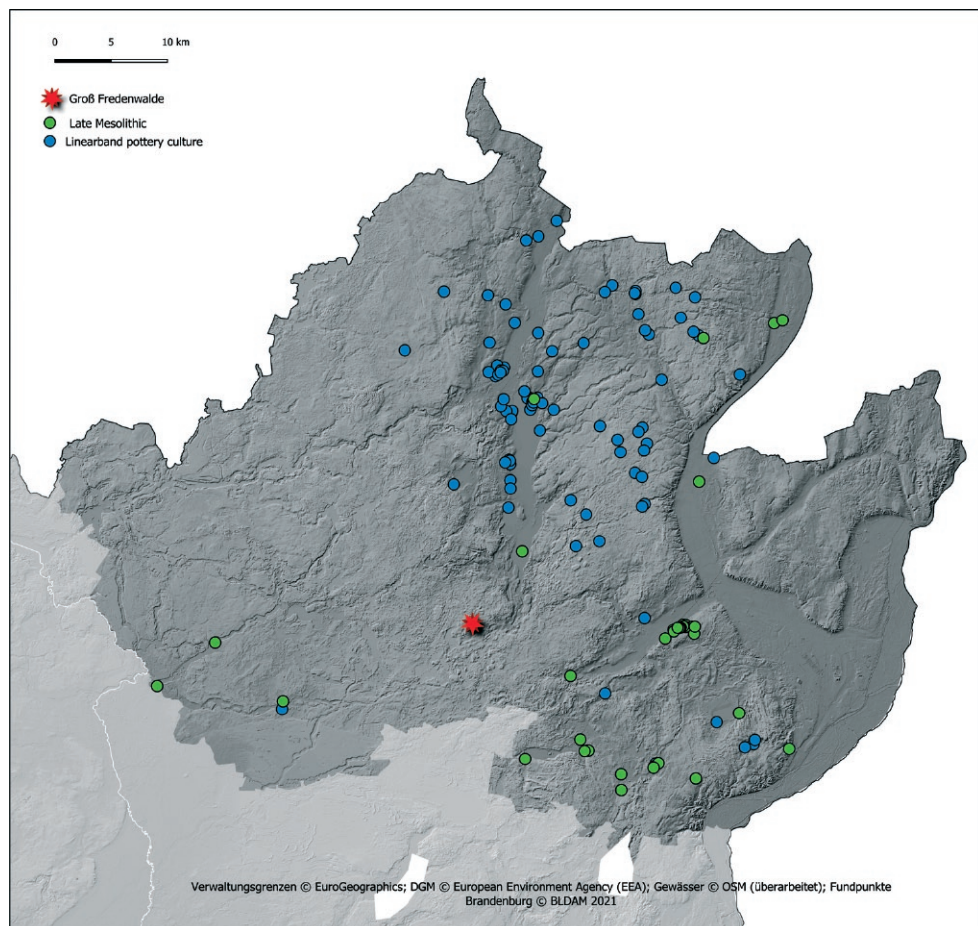


Fig. 6. Late Mesolithic sites (according to BLDAM data; single finds excluded) and LBK sites (after: Ismail-Weber 2017; single finds excluded) in the Uckermark region. Only for the Mesolithic site Groß Fredenwalde contemporaneous existence with LBK is verified by ^{14}C dates. Prepared by A. Kotula, A. Srzbesny

Ryc. 6. Stanowiska późnomezolityczne (na podstawie BLDAM; bez znalezisk luźnych) oraz KCWR (za: Ismail-Weber 2017) w regionie Uckermark. Tylko dla stanowiska Groß Fredenwalde współwystępowanie z KCWR zostało potwierdzone na podstawie dat ^{14}C . Oprac. A. Kotula, A. Srzbesny

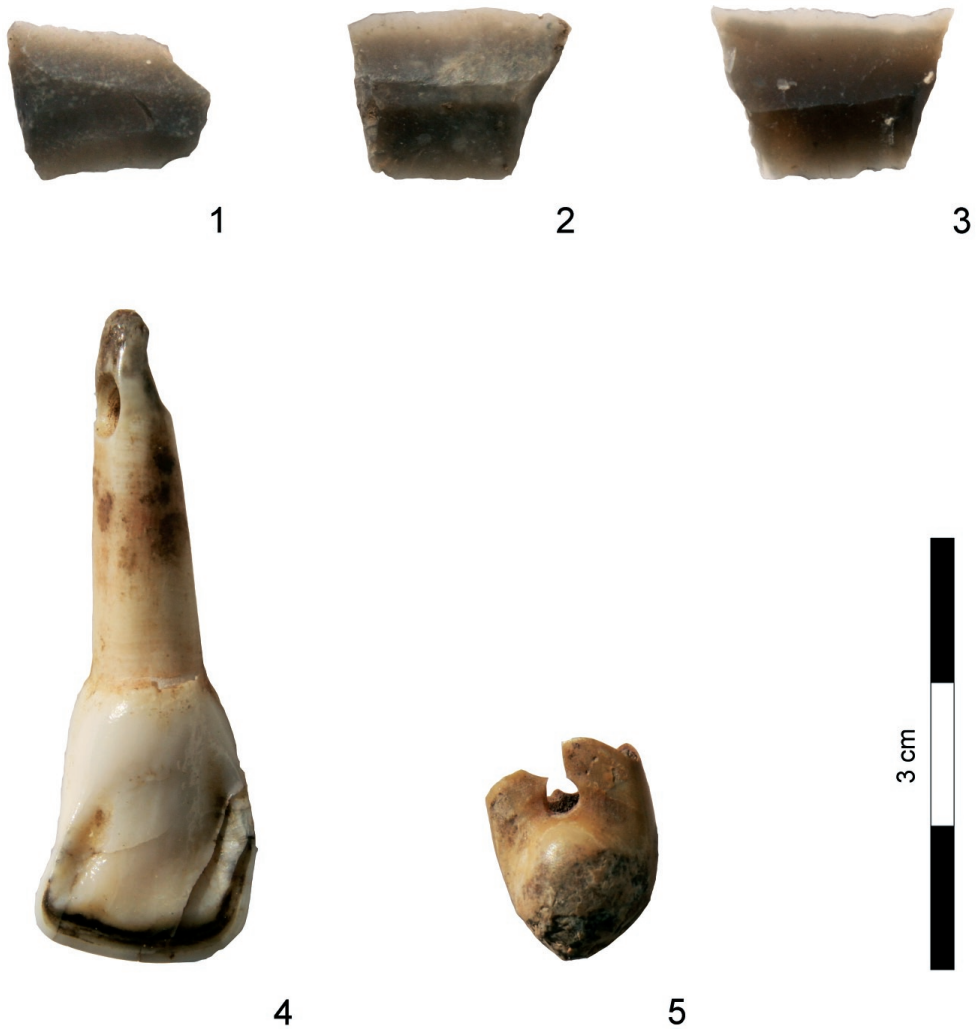


Fig. 7. Lietzow 10, feature 32. Mesolithic finds: 1–3 – trapezes, 4 – horse tooth pendant, 5 – deer tooth pendant (“Hirschgrandel”). Photograph by A. Kotula

Ryc. 7. Lietzow 10, obiekt 32. Znaleźiska mezolityczne: 1–3 – trapezy, 4 – zawieszka z zęba końskiego, 5 – zawieszka z zęba jelenia (Hirschgrandel). Fot. A. Kotula

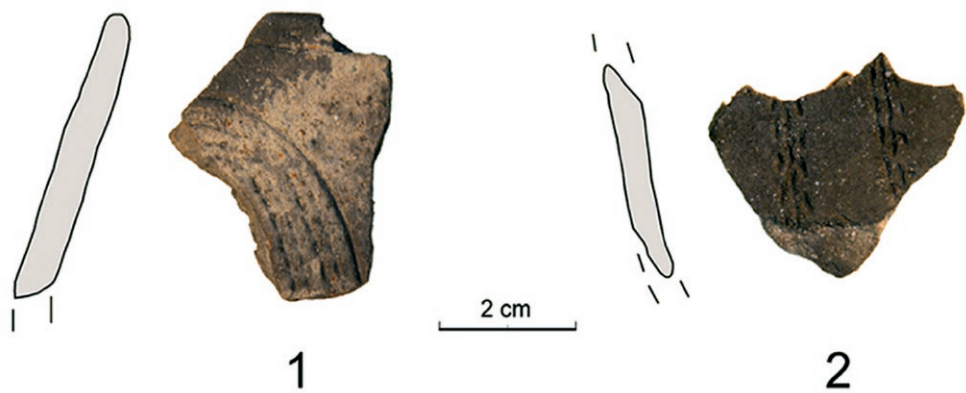


Fig. 8. Parow 4: 1 – LBK pottery fragment; 2 – Stroke Band pottery fragment. Prepared by A. Kotula

Ryc. 8. Parow 4: 1 – fragment ceramiki KCWR; 2 – fragment ceramiki kreskowej kłutej. Wyk. A. Kotula

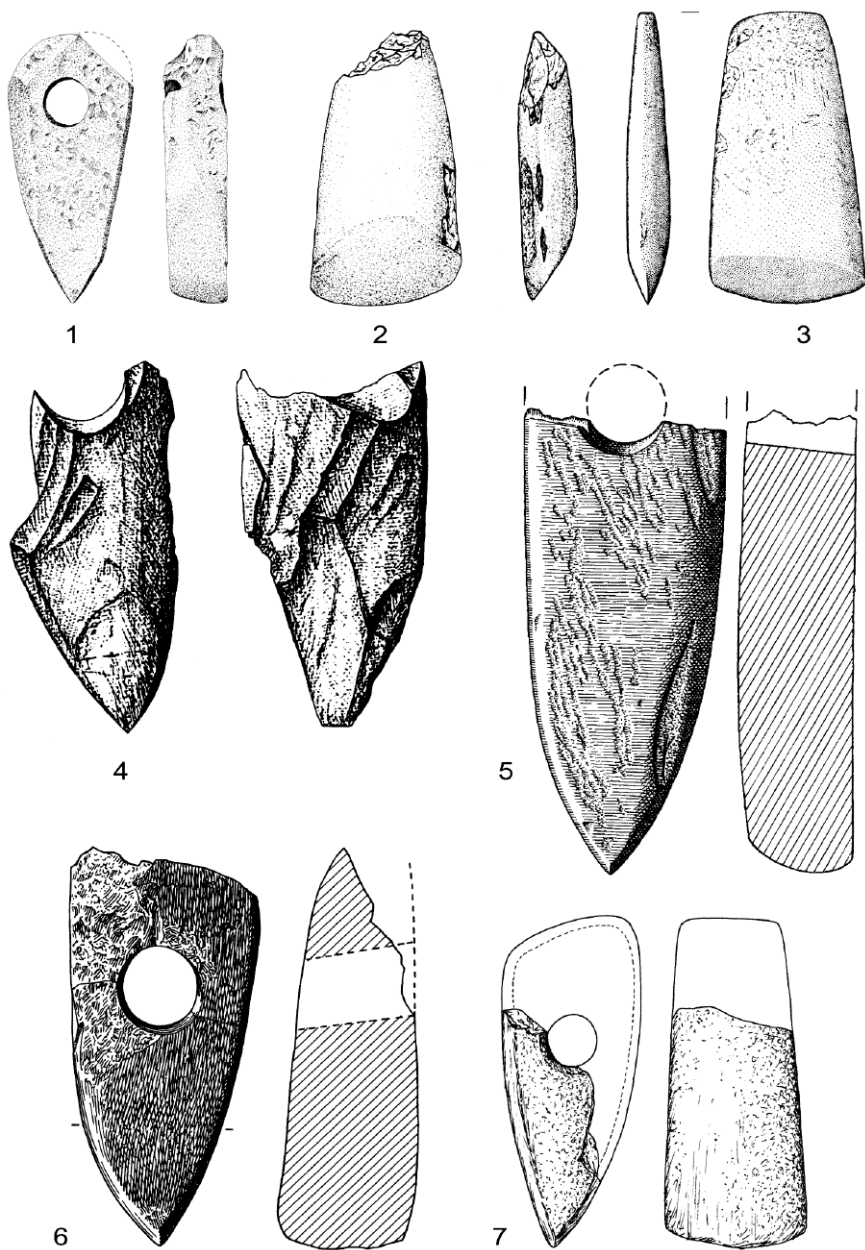


Fig. 9. Shoe-last celts (German: *Schuhleistenkeil*) and their fragments on Mesolithic coastal sites: 1 – Dąbki 9; 2 – Saiser Fp. 1; 3 – Parow Fp. 4; 4 – Ralswiek Fp. 8; 5 – Prohn 15; 6 – Bad Oldesloe-Wolkenwehe LA 154; 7 – Hamburg-Boberg Fp. 20 (see Terberger *et al.* 2009, Fig. 9). Scale 1:3
 Ryc. 9. Gładzone siekiery i toporki oraz ich fragmenty z mezolitycznych stanowisk na wybrzeżach: 1 – Dąbki 9; 2 – Saiser Fp. 1; 3 – Parow Fp. 4; 4 – Ralswiek Fp. 8; 5 – Prohn 15; 6 – Bad Oldesloe-Wolkenwehe LA 154; 7 – Hamburg-Boberg Fp. 20 (zob. Terberger *et al.* 2009, fig. 9). Skala 1:3

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**First meetings?
The Late Mesolithic and the Linear Pottery culture
in Northeast Germany**

Summary

The text provides a critical review of the early Atlantic period (c. 7,000–5,000 cal BC), when late foragers potentially met with early farming communities in Northeast Germany. First the more reliable evidence for Late Mesolithic sites is presented. Among them is the Mesolithic site of Groß Fredenwalde in the Uckermark (Brandenburg), where probably c. 12 individuals were buried. Most of the graves date to the second half of the 7th millennium BC. Where mtDNA of Mesolithic individuals is available they show typical U4 and U5 haplotypes. It is likely that only a sparse Mesolithic population lived in the lowlands when Linear Pottery (LBK) farmers established at 5,300–5,200 cal BC in northeast Germany. There is increasing evidence that the LBK in Brandenburg is represented by a fully developed farming economy. A more recent burial of Groß Fredenwalde dated to c. 4,900 cal BC and the single interment of site Rathsdorf (c. 5,300 cal BC) are Mesolithic individuals, who could have personally met with early farmers. At the LBK site Lietzow 10 some Mesolithic finds were found in a pit and they provide rare evidence of direct contacts between the different populations. Early contacts can also be proven by isolated LBK pottery fragments on coastal sites. More frequent contacts between the different communities were established after c. 4,900 cal BC. It is not before the late 5th millennium BC that these contacts fostered the neolithisation of the lowlands.

**Pierwsze spotkania?
Późny mezolit i kultura ceramiki wstęgowej rytej
w Niemczech Północno-Wschodnich**

Streszczenie

W artykule dokonano krytycznej analizy zjawisk kulturowych wczesnego okresu atlantyckiego (ok. 7000–5000 cal BC), kiedy łowcy-zbieracze potencjalnie mogli mieć kontakt z wczesnymi społecznościami rolniczymi występującymi w Niemczech Północno-Wschodnich. Jednym z ważniejszych stanowisk z tego okresu jest późnomezolityczne cmentarzysko w Groß Fredenwalde w Ueckermark (Brandenburgia), gdzie większość grobów datowana jest na 2. połowę VII tysiąclecia BC. Możliwe, że gdy Niż Północnoeuropejski był kolonizowany przez ludność kultury ceramiki wstęgowej rytej (ok. 5300–5200 cal BC), jedynie nieliczna populacja mezolityczna zasiedlała ten teren. Jest też coraz więcej dowodów na to, że KCWR w Brandenburgii prowadziła w pełni rozwiniętą gospodarkę opartą na rolnictwie. Jeden z późniejszych pochówków z Groß Fredenwalde, datowany na ok. 4900 cal BC, oraz pojedynczy pochówek z Rathsdorf (ok. 5300 cal BC) należą do osób, które mogły mieć bezpośredni kontakt z pierwszymi społecznościami rolniczymi. Stanowisko KCWR Lietzow 10 dostarczyło niezwykle rzadkich dowodów na bezpośrednie relacje pomiędzy różnymi populacjami. Dowodami na wczesne kontakty mogą być również pojedyncze fragmenty ceramiki KCWR znajdujące się na stanowiskach brzegowych. Bardziej intensywne związki nastąpiły jednak dopiero przy końcu V tysiąclecia BC, co zapoczątkowało neolityzację całego Niżu.

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