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The problem of recognition of the Szeletian in Poland – an overview of the subject

ABSTRACT

The influx of new data challenge existing divisions and schemes of archeological units such as the so-called “transitional industries” between the Middle and Upper Paleolithic or the Early Upper Paleolithic. An example of such an industry is Szeletian. After almost 70 years since this word was coined, it is still uncertain what characterizes this industry. To resolve these issues, we need to re-assess the inventory of known Szeletian sites. Across the geographical range of the Szeletian, sites from Poland have not been adequately studied. The analysis of available data showed significant heterogeneity among Szeletian sites in Poland, especially in terms of the distinguishing feature – the leaf points. The next issue is the problem of the distinction between Szeletian, Jerzmanowician, Bohunician, and Jankovichian. In the case of Poland, it is even more challenging because of small assemblages, uncertain context, and lack of publications concerning Szeletian sites.

KEYWORDS

Szeletian, leaf points, transitional industries, Early Upper Paleolithic



I. INTRODUCTION

The Middle-to-Upper Paleolithic transition maps a highly dynamic period – a techno-cultural “mosaic” – yet many of the named archaeological complexes in this period were defined decades ago, and their techno-typological integrity is often unclear or awaits re-assessment. The perfect example of such a complex is the Szeletian, which F. Prošek first introduced in 1953 to describe stone artifact inventories with leaf points (Prošek 1953). The name of the complex was based on the eponymous site – Szeleta Cave, situated in northern Hungary (Mester 2018). The Szeletian is typically understood as a “transitional industry” or Early Upper Paleolithic complex with leaf points that mixes technologically and typologically characteristics of the Middle and Upper Paleolithic (Svoboda, Simán 1989; Škrdla *et al.* 2014; Wilczyński, Wiśniewski 2016; Mester 2018). However, there is still no clear definition of this complex, and the reason for this situation is in the long history of excavation and research of the eponymous site itself – the Szeleta Cave. In terms of the *fossile directeur* of Szeletian – the leaf points, Szeleta Cave, have yielded many variants of this tool type, so a pronounced variability of leaf points commonly characterizes the Szeletian.

Scholars seldom study Szeletian in Poland, and although traces of discussed complex are not abundant, it is a necessary and valid part of research that will help understand the tangled situation in Central Europe during the Early Upper Paleolithic. The article intends to present the main problems with the recognizing of Szeletian in Poland based on available data. Furthermore, provide a provisional overview of the status of research by mostly re-evaluating the literature and in case of two sites by author’s analysis. The task is to emphasize the heterogeneity of the Szeletian in Poland based on determinants of this industry, the leaf points.

II. PROBLEM OF IDENTIFYING SZELETIAN IN POLAND

The Szeletian settlement in Poland occupies the southern part of the country and concentrates on the area of Silesia, Kraków-Częstochowa Upland, and the Carpathians (Fig. 1) (Połtowicz-Bobak *et al.* 2013, 487). Some scholars also add the Sudetes, based on two sites – Północna Cave and Cave “above Eastern Cave” (Foltyn 2003, 21). The belonging of the first site to the Szeletian was disproved because of the lack of the distinctive features of this complex – the leaf points are determined in a general way as Upper Paleolithic, without

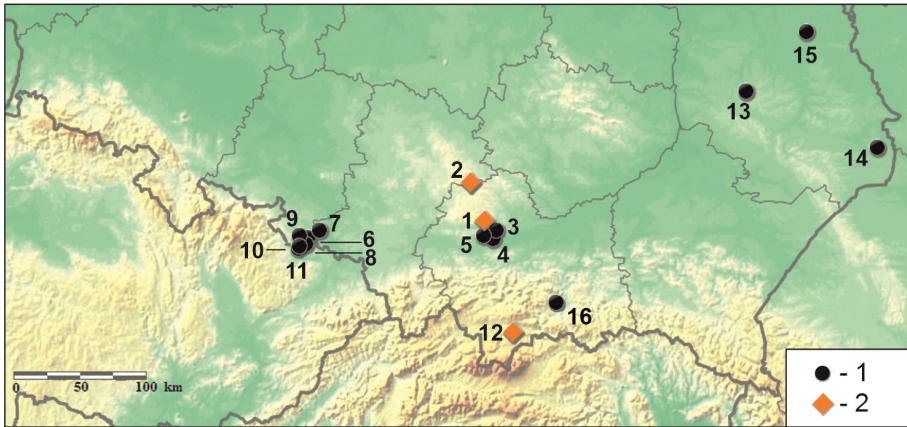


FIG. 1. Localization of Szeletian sites and sites with Szeletian elements in Poland (1 – open-air sites, 2 – cave sites): 1. Mamutowa Cave; 2. Jasna Cave in Strzegowa; 3. Kraków-Prądnik Czerwony; 4. Kraków-Hill of the Blessed Bronisława; 5. Kraków-Zwierzyniec I; 6. Dzierżysław I; 7. Maków 15; 8. Rozumice 32; 9. Lubotyń 11, 10. Pilszcz 63 (?), 11. Pilszcz 64 (?), 12. Obłazowa Cave, 13. Mircze, 14. Bychawa-Zadębie, 15. Wiązowiec, 16. Gostwica (?) (drawn by M. Lech)

defining cultural affiliation (Burdukiewicz 1999, 42). The second site is mentioned in only one article (Foltyn 2003), and in later publications concerning Szeletian in Poland, Cave “above Eastern Cave” is not listed (Połtowicz-Bobak *et al.* 2013; Wiśniewski, Wilczyński 2016). Without any further information, it could not be considered as the Szeletian site.

The exact number of Szeletian sites in Poland is difficult to ascertain due to overlapping features with other Early Upper Paleolithic complexes like Bohunician and Lincombian–Ranisian–Jerzmanowician (LRJ) represented in Central Europe by the Jerzmanowician (Flas 2011; Škrdla 2017; Krajcarz *et al.* 2018). The main attribute of the LRJ is leaf points, but they are made on blades with characteristic proximal shaping. Nevertheless, on LRJ sites also occurred bifacial leaf points made on flakes and blocks (Flas 2011, 610), which could be deemed Szeletian leaf points. Bohunician, on the other hand, characterizes by the fusion of Levallois and blade technology used to create characteristic elongated Levallois points, and the blades dominate in the blank production (Oliva 2017; Škrdla 2017). Leaf points are not one of the elements that distinguish Bohunician from other Early Upper Paleolithic units. The situation is quite the opposite; leaf points belonging to Bohunician show a wide variety with similar specimens to Jerzmanowician and Szeletian (Škrdla, Rychtaříková 2012; Oliva 2017).

Additionally, few sites with leaf points in Poland were compared to Jankovich Cave's inventory – the eponymous site of Jankovichian. This unit was described first as a geographic variant of the Szeletian – “Transdanubian group” and later created as a separate Middle Paleolithic industry (Gábori-Csánk 1993; Markó 2013a; Mester 2017). Jankovichian is not well defined due to the eponymous site's early excavation and unclear stratigraphy (Markó 2013a). The form, definition of Jankovichian, and relation with Szeletian are still debated among Hungarian scholars (Markó 2013a; Mester 2017; 2018; Markó 2019); however, distinguishing features – the leaf points from Szeleta Cave and Jankovich Cave show a significant similarity (Mester 2017).

III. SZELETIAN SITES IN POLAND

Mamutowa Cave

Inventory with leaf points in Mamutowa Cave in literature is labeled alternately as traces of Szeletian and Jerzmanowician complex (Kaczanowski, Kozłowski 1998; Połtowicz-Bobak *et al.* 2013; Krajcarz *et al.* 2018). Two layers with leaf points were distinguished at the discussed site. First (VII) contains only semi-finished leaf point, and in the second one (VI) were found two bifacial leaf points (Fig. 2.2-3), two leaf points on blades (Fig. 2.8, 2.10), one side-scraper, five retouched flakes, and a piece of leaf point on the blade (Fig. 2.10) (Kowalski 1969). The last artifact (Fig. 2.10) and semi-finished leaf points are not mentioned in the second publication discussing leaf points from Mamutowa Cave, and their absence is not commented on by the author (Kowalski 2006). Scholars also add to these layers, two bifacial leaf points from the excavation by J. Zawisza in the 19th century (Fig. 2.5, 2.7), (Kozłowski, Kozłowski 1977; Kowalski 2006). All artifacts are made from flint, of which the type is unknown, apart from a short note that some of them are from chocolate flint (Kozłowski, Kozłowski 1977, 372). In the later publication, S. Kowalski briefly presents results after long-term excavations in Mamutowa Cave, only adding to layer VI three bifacial leaf points (Fig. 2.1, 2.4, 2.6). One is made from radiolarite (Fig. 2.6) (<https://muzea.malopolska.pl/pl/lista-obiektow/1487>), the raw material of the remaining two is unknown. In a recent analysis of artifacts without stratigraphic position from Mamutowa Cave, the author suggests that one retouched blade belongs to the Jerzmanowician layer and interprets it as a semi-finished “Jerzmanowice point” (Fig. 2.9) (Chowaniak 2018, 45).

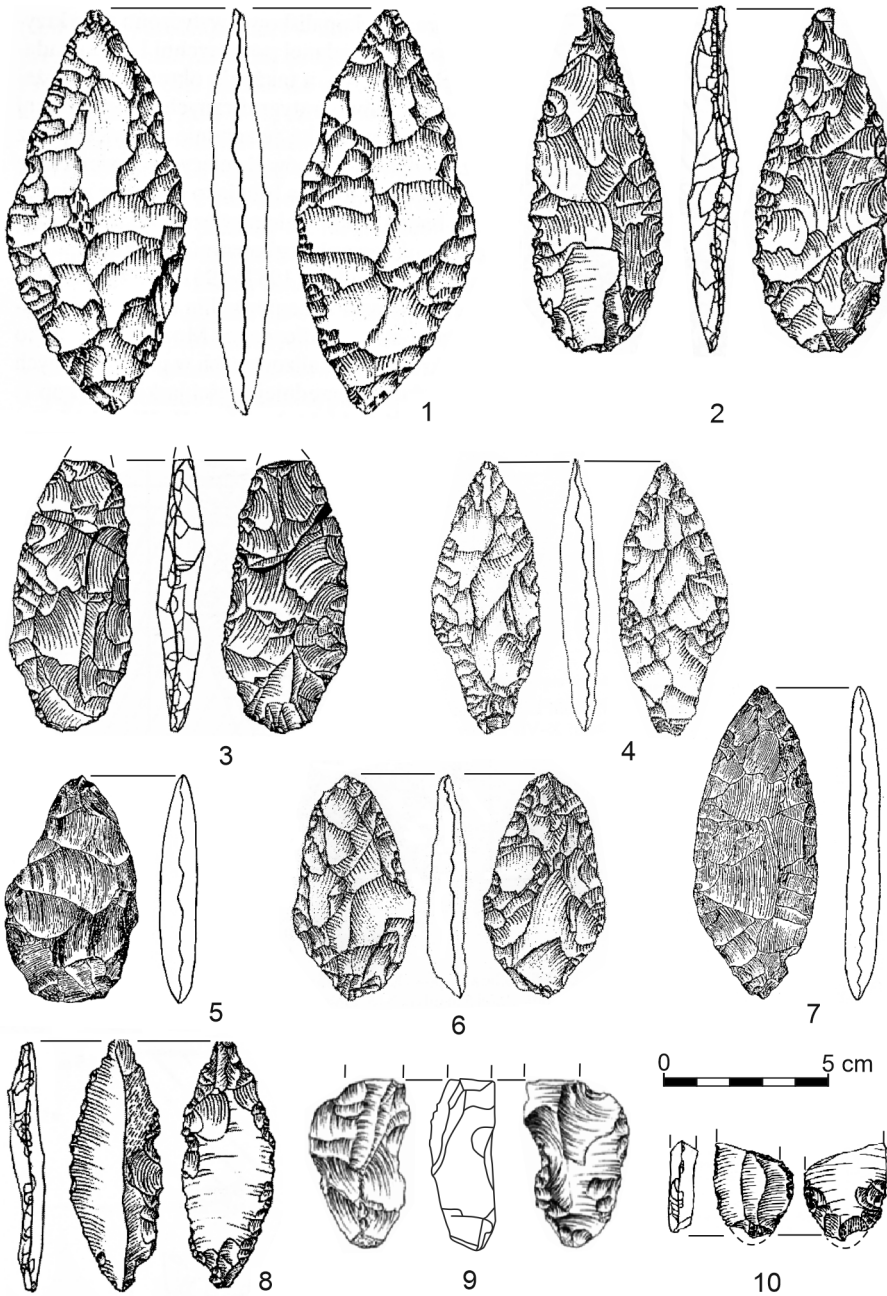


FIG. 2. Leaf points from Mamutowa Cave: 2.1-2.4, 2.6, 2.8 (Kowalski 2006); 2.5, 2.7 (Kozłowski 1922); 2.9 (Chowaniak 2018); 2.10 (Kowalski 1969)

Biśnik Cave and Jasna Cave in Strzegowa

Biśnik Cave has a small inventory connected with transitional industry labeled as Szeletian/Jerzmanowician based on one broken leaf point made on the blade (Fig. 3.2) (Sudoł, Cyrek 2015, 56). Due to the blank from which this tool is produced is most likely a trace of the Jerzmanowician industry. The other artifacts found with the mentioned tool are a side-scraper, retouched blade, two burins, and a knife. According to the authors, artifacts are mixed materials from Middle and Upper Paleolithic layers. Details about raw materials were not given (Sudoł, Cyrek 2015, 57).

In Jasna Cave in Strzegowa, analogically to the Biśnik Cave, inventory connected with Szeletian/Jerzmanowician consists of only one fragment of bifacial leaf point from Jurassic flint (Fig. 3.1) (Sachse-Kozłowska 1977).

Kraków-Prądnik Czerwony and Kraków – Hill of the Blessed Bronisława

A modest assemblage, made from Jurassic flint, was recovered in the 1940s from an excavation by A. Jura in Kraków-Prądnik Czerwony. This assemblage included one leaf point on a flake (Fig. 3.3), backed knife, retouched flake, side scraper, and bifacial tool (Kozłowski, Kozłowski 1977; Lech 2017). The last tool is not mentioned in older studies (Kozłowski, Kozłowski 1977) and is probably the result of mixing with inventory from site Kraków-Zwierzyniec I (Lech 2017). Also, the homogeneity of the rest of this assemblage is in question (Kozłowski, Kozłowski 1977; Lech 2017). Additionally, there is no certainty about the original localization of the discussed materials. Discoverer of the site – A. Jura wrote about finding lithics within the district of Kraków-Prądnik Czerwony. However, on the attached map, the site is marked outside Kraków on the terrain of village Bibice (Jura 1939). Kraków-Prądnik Czerwony was interpreted as traces of “Middle – Paleolithic cultures with leaf points” and often compared to the inventory of Jankovich Cave (Kozłowski, Kozłowski 1977; Foltyn 2003). The similarity of Kraków-Prądnik Czerwony to Jankovichian is based mainly on occurring leaf points and ventral thinning on the proximal part of the tool, which is not characteristic of inventory from Jankovich Cave (Markó 2013a, 23). In more recent publications, Kraków-Prądnik Czerwony is referred to as the Early Upper Paleolithic site, without specific complex affiliation (Wiśniewski, Wilczyński 2016).

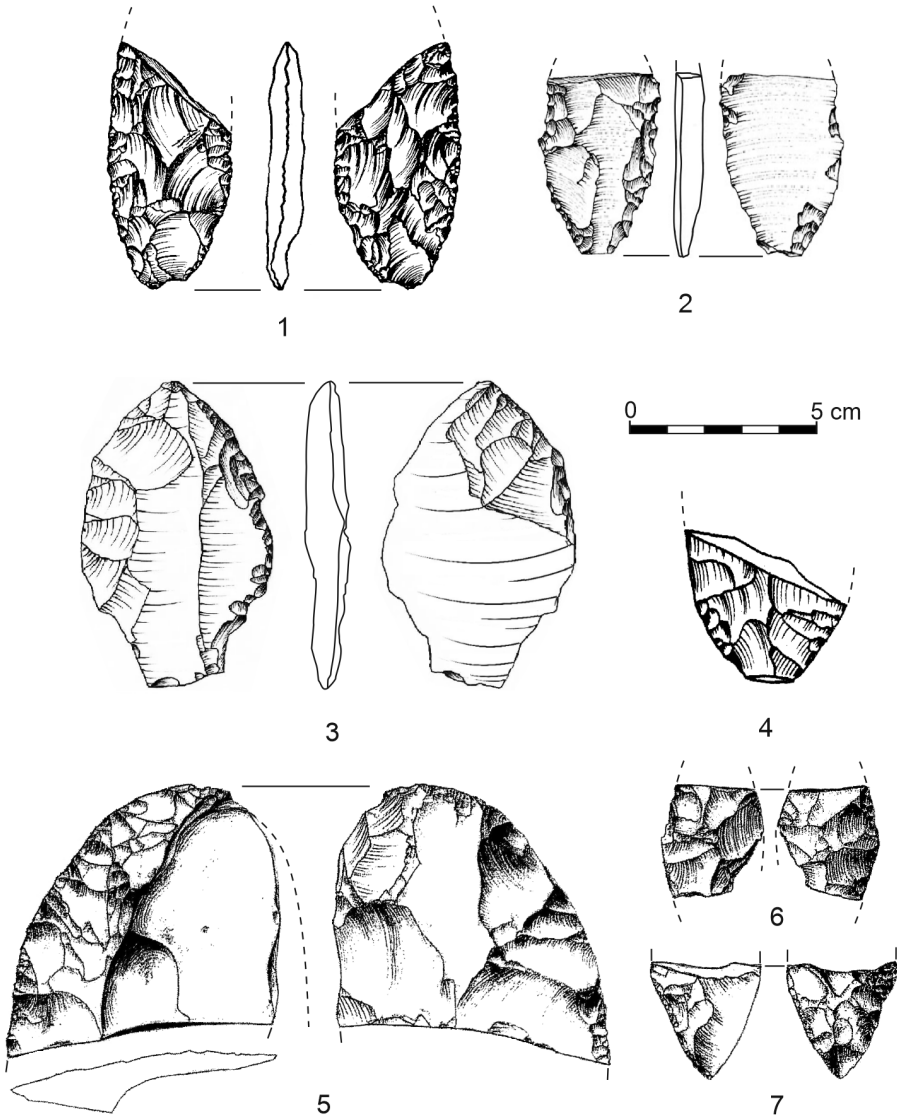


FIG. 3. Leaf points from: 3.1 – Jasna Cave in Strzegowa; 3.2 – Biśnik Cave (Sachse-Kozłowska 1977; Sudoł, Cyrek 2015); 3.3 – Kraków-Prądnik Czerwony (Lech 2017, drawn by the author); 3.4 – Kraków-Hill of the Blessed Bronisława (Kozłowski, Kozłowski 1977); 3.5-7 Kraków-Zwierzyniec I d – refitting of pieces from Trench 1 (LS 1) and Trench 31-35/H-L(AJ) (Mańka 2006; Kozłowski 2006; Krzepakowska 2006)

Kraków-Hill of the Blessed Bronisława is mainly known by traces of Aurignacian culture, but during excavations, one leaf point (Fig. 3.4) was found outside the trench on the surface (Kozłowski, Kozłowski 1977, 333). The type of raw material from which the artifact is made is not given.

Kraków-Zwierzyniec I

Kraków-Zwierzyniec I is another site connected with the “transitional units.” Analysis of this site is highly challenging because of the solifluction process, which is the cause of mixed lithic inventories and unclear stratigraphy (Krzepkowska 2006; Mańka 2006). Assemblages with leaf points were found in Trench 1 and layer 4 in Trench 31-35 H/L, but only the collection from Trench 1 is considered as Szeletian (Krzepkowska 2006; Mańka 2006). Inventory in Trench 1 was mixed with Aurignacian assemblage and was separated by means of typological and technological analysis. It consists of 101 specimens, mainly tools, where the most numerous are side-scrapers (62) and denticulate tools (20). Only seven bifacial and one unifacial leaf point were found (Fig. 3.5-3.7). Additionally, single specimens of perforators, burins, Levallois, and Mousterian points belong to this inventory (Krzepkowska 2006). Because of leaf points occurring with mostly Middle-Paleolithic tool types, assemblage from Trench 1 is compared to Szeletian and Jankovichian sites. Traces of Levallois technology in this assemblage led scholars to compare this inventory to Bohunician, but the characteristic for Bohunician – elongated Levallois points did not occur here. The finds from layer 4 in Trench 31-35 H/L at Kraków-Zwierzyniec I are attributed to Jerzmanowician based on leaf points made on blades (Mańka 2006).

Dzierżysław I

Discovered during the first half of the twentieth century, site Dzierżysław I yielded hundreds of flint artifacts. On this site, two layers with leaf points were distinguished. The lithic assemblage contains 884 artifacts in the lower layer, predominately flakes (498), and blades that make up one-third of the collection (Wiśniewski 2006). The most numerous in the tools category are retouched flakes and blades, Levallois flakes, notched tools, and sidescrapers. 15 specimens of leaf points were discovered, and they are represented mainly by the preforms of leaf points (Fig. 4.6). Also, four bifacial, one unifacial, and two Jerzmanowice points were recorded here (Fig. 4.9). Inventory of Dzierżysław I consists also of twenty-nine cores: single and double

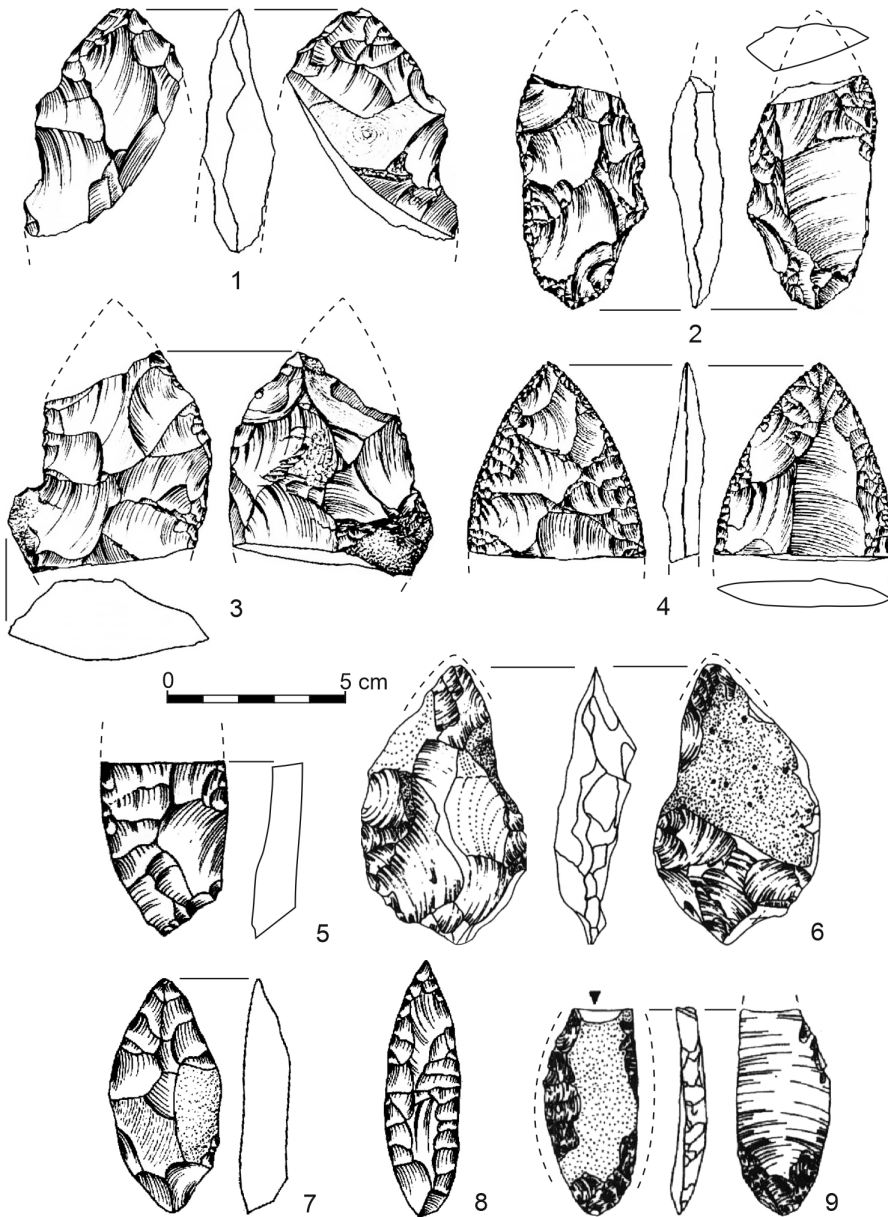


FIG. 4. Leaf points from: 4.1-4.4 Kraków-Zwierzyniec I, labeled as belonging to leaf point assemblages (Kozłowski 2006); 4.5-9 – leaf points from Dzierżysław I (Kozłowski 1964; Foltyn, Kozłowski 2003)

platform and Levallois cores (Wiśniewski 2006). Because of the coexistence of Levallois technology, leaf points, and Middle and Upper Paleolithic tool types, discussed layer was labeled as Bohunician (Bluszcz *et al.* 1994). The subsequent analyses did not confirm that assignment because of the absence of characteristics for Bohunician elongated Levallois points and traces of their production (Wiśniewski 2006; Wiśniewski, Wilczyński 2013). The upper level of Dzierżysław I, interpreted as Szeletian, consists of 906 stone artifacts, where almost half of them are flakes (442), and blades were found in much smaller numbers (145). The tool category is dominated by end-scrapers (22), side-scrapers (19), and leaf-points (14; Fig. 4.5, 4.7-8). The upper layer yielded almost 80 cores, mostly single platform and primarily blade cores (Wiśniewski 2006). Compared to the lower layer, there are no traces of Levallois technology in this level. Other than that, inventories from the lower and upper layers showed typological resemblance, and also, in terms of raw material, Upper Silesian erratic flint usage is predominant in both cases (Bluszcz *et al.* 1994). Affiliation to complexes of these layers is problematic due to strong metric and morphologically diverse characteristic features of leaf points, within which occurred a single specimen characteristic both for Szeletian and Jerzmanowician (Bluszcz *et al.* 1994; Wiśniewski 2006).

Dzierżysław 8, Dzierżysław 79, Maków 15

Dzierżysław 8 is known only from the surface survey. Site is referred in literature as Szeletian (Kozłowski 1964) and Bohunician (Foltyn 2003). There is only one leaf point made on a blade in the inventory, collected from the survey, and it represents a “Jerzmanowice point” (Fig. 5.1). The discussed artifact was made from flint; no detailed information was given about the raw material (Kozłowski 1964, 46).

One bifacial artifact was found during surface survey preceding test excavations in 2003 in Dzierżysław 79 (Połtowicz 2006). The author of excavation interpreted it as a semi-product of leaf point (Fig. 5.2); the information about raw material was not provided. In later publications site is not included in the discussion about Szeletian in Poland (Połtowicz-Bobak *et al.* 2013; Wiśniewski, Wilczyński 2016).

Analogically to previous sites, Maków 15 is a site known from a survey with abundant, not homogenous assemblages containing flint artifacts from Paleolithic and Neolithic times. Among them, only one fragment of leaf points (Fig. 5.3) was collected; the type of flint was not specified (Kozłowski 1964, 62).

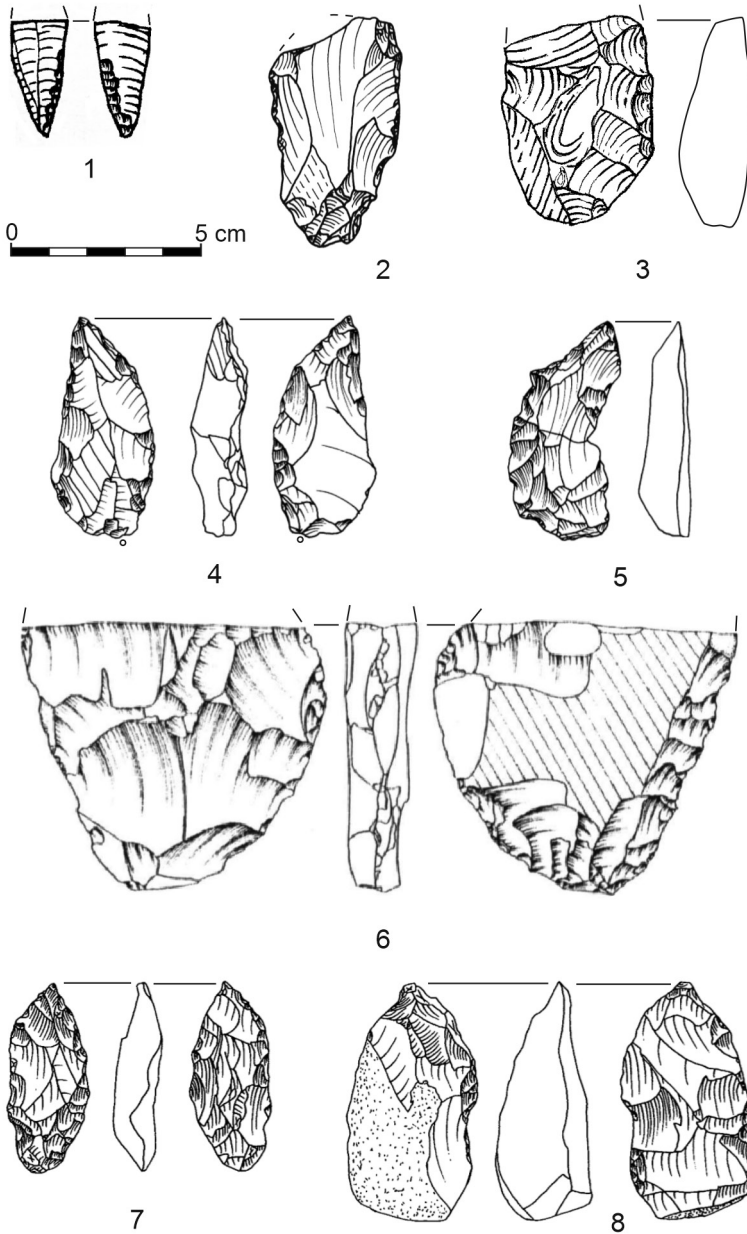


FIG. 5. Leaf points from: 5.1 – Dzierżysław 8; 5.2 – Dzierżysław 79; 5.3 – Maków 15 (Kozłowski 1964; Połtowicz 2006); 5.4-6 – Lubotyń 11 (Wilczyński 2008; Połtowicz-Bobak *et al.* 2013); 5.7-8 – Pilszcz 63 and 64 (Bobak, Połtowicz-Bobak 2009)

Rozumice 32, Babice, Cieszyn, Dzierżysław 3, Kietrz 3, Kietrz 4, Rozumice 5

From the first site, Rozumice 32 assemblage was collected from the surface survey, which consists of two cores, two end-scrapers, and around 20 blades and flakes. Moreover, in the documentation from the 1930s about Rozumice 32, information was given about finding one bifacial leaf point, and according to discoverer H. Linder, it is similar to specimens from the Jankovich Cave. Unfortunately, the artifact was lost (Kozłowski 1964, 89), however according to A. Wiśniewski, this assemblage contains two leaf points (Wiśniewski 2006, 101). Rozumice 32 in literature is referred as Szeletian (Kozłowski 1964), but also as Bohunician (Foltyn 2003), yet no traces of Levallois technology were found (Wiśniewski 2006).

As reported by G. Raschke in his publications from 1933, two flint artifacts were found at the Cieszyn site – one leaf point and Mousterian point – both artifacts were lost (Kozłowski 1964, 27).

Sites Babice, Cieszyn, Dzierżysław 3, Kietrz 3, Kietrz 4 and Rozumice 5 were mentioned in literature as Szeletian sites. Neither of them contains leaf points (Kozłowski 1964), so they should not be considered as belonging to this complex.

Lubotyń 11

The most abundant Szeletian site in Poland is Lubotyń 11, with more than 3000 flints artifacts. Not many cores were found among this inventory – only 66 items (Połtowicz-Bobak *et al.* 2013). Mainly flake cores occur on this site, a couple of blades and discoidal ones, and only one Levallois core. The tools category consists of 184 items – dominant types are retouched flakes, blades, end-scrapers, and side-scrapers. Only nine leaf points were found in the Lubotyń 11, and there are mostly preserved fragmentally; only two are whole (Fig. 5.4-5). The rest of the collection comprises flakes and blades (where the flakes are predominant over blades). Nearly the whole inventory is made from local flint (Połtowicz-Bobak *et al.* 2013). Additionally, one fragment of leaf point from erratic flint (Fig. 5.6) was found during a surface survey in Lubotyń 11 (Wilczyński 2008).

Pilszcz 63 and 64

Subsequent sites from Głubczyce Plateau are two surface collections from Pilszcz 63 and 64 – both made from an unspecified type of flint (Bobak,

Połtowicz-Bobak 2009). Pilszcz 63 contains 33 artifacts – two cores, nine tools, and the rest is debitage. There is no leaf point among tools, only one unfinished bifacial tool (Fig. 5.8), which the authors interpret as a semi-product of leaf point (Bobak, Połtowicz-Bobak 2009). Pilszcz 64 consists of only one bifacial leaf point (Fig. 5.7), denticulate tool, two flakes, and one blade (Bobak, Połtowicz-Bobak 2009). Affiliation to the Szeletian complex of both sites is very doubtful due to small inventory, unsure homogeneity, and in the case of Pilszcz 64, lack of leaf points. Poland's most recent publication concerning the Early Upper Paleolithic, Pilszcz 63 and 64 are not mentioned (Wiśniewski, Wilczyński 2016).

Bieńkowice, Cyrzanów 3, Dzierżno 6, Jaworze 8a, Rozumice 4, Rozumice 17, Rozumice 22, Rozumice 33, Samborowice 2a

All sites are mentioned briefly in only one publication and labeled as Szeletian (Foltyn 2003). Without further published detailed studies, the sites could not be considered as belonging to the Szeletian industry.

Obłazowa Cave and Gostwica

A small assemblage recovered from layer XI at the Obłazowa Cave is one of the two sites containing leaf points in the Polish part of the Carpathians Mountains (Valde-Nowak *et al.* 1995; Valde-Nowak 2003). Collection yielded 68 stone artifacts predominantly made from local raw material – radiolarite (Lech 2020). Tools make the majority of the inventory in which prevail re-touched flakes. The most important finds are three leaf points (Fig. 6.1-3). The first is bifacially retouched with most arguably a small tang (Fig. 6.1), and the second one is not a typical leaf point (Fig. 6.2); it is probably a flake from bifacial treatment, but it corresponds to the definition of leaf points (Lech 2020). M. Kot stressed the problem of a broad definition of leaf point in her Ph.D. dissertation (Kot 2013). The third specimen is the most likely part of the base of the bifacial leaf point (Fig. 6.3). Other tools like, for example, side-scraper, backed knife, segment was found in single specimens (Lech 2020). Layer XI at Obłazowa Cave also contains two osseous tools (Fig. 6.4-5). They are small, broken parts of points and do not represent any characteristic features. However, they are vital assemblage elements because scholars tend to overlook the osseous artifacts in Szeletian contexts and are generally interpreted as traces of mixing with the Aurignacian inventory. Nevertheless, the osseous tool

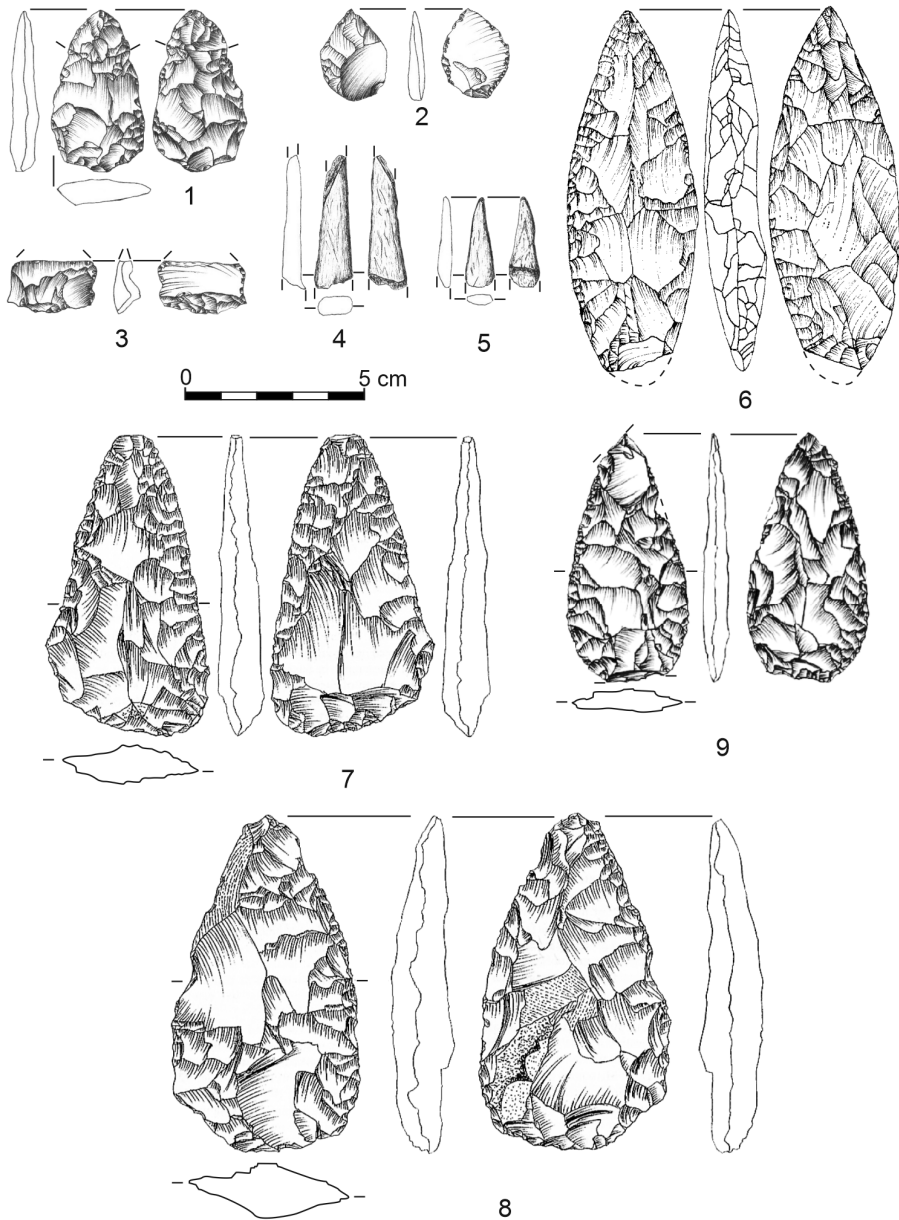


FIG. 6. Leaf points (6.1-3) and osseous points (6.4-5) from: Obłazowa Cave (Lech 2020, drawn by the author); 6.6 – Gostwica (Cabalska 1992); 6.7 – Mircze; 6.8 – Bychawa-Zadębie and 6.9 – Wiązowiec (Libera 2008; 2014)

occurred within Szeletian and Jankovichian inventories, and this element of complexes with leaf point requires further research (Markó 2013b).

The site, Gostwica was discovered in 1972 during digging a well, and one leaf point from the unspecified type of flint was found (Fig. 6.6) (Cabalska 1992). Only two publications mention this artifact, in the first the find is labeled as “Jerzmanowician point”, and the second is referred to as the Szeletian site (Cabalska 1992; Foltyn 2003). The affiliation of this site is still uncertain and awaits re-assessment.

Mircze, Bychawa-Zadębie, Wiązowiec

In recent years, three finds of bifacial leaf points appeared in Eastern Poland (Fig. 6.7-9). Two were found in the Lublin region – Mircze (Fig. 6.7), Bychawa-Zadębie (Fig. 6.8). Both artifacts are completely patinate, making it challenging to identify the type of raw material (Libera 2008). The third find comes from site Wiązowiec localized in Polesie (Fig. 6.9). The bifacial leaf point is made most probably from local erratic or Rejowiec flint (Libera 2014). Unfortunately, all artifacts are collected from the surface, and the context is unknown (Libera 2008, 201).

IV. DATING SZELETIAN IN POLAND

Data concerning the chronology of Szeletian in Poland are modest. Szeletian settlement on site Lubotyń 11 authors of research place between 49 000 and 39 000 BP; however, some should be approached with caution due to incompleteness or insufficient amount of data (Bobak *et al.* 2016). The only certain data for Szeletian in Poland comes from layer XI in Obłazowa Cave obtained from bird bone and places the occurrence of Szeletian between 45-39 ka cal. BP (Alex *et al.* 2017).

V. DISCUSSION

Attempts to understand Szeletian settlement in Poland is straitened mainly by overlapping with Jerzmanowician settlement. Scientists have previously questioned the existence of the Lincombian–Ranisian–Jerzmanowician complex. However, this unit’s technological, typological aspects, and most crucially

geographical range suggest that it is not part of other industries like Szeletian, Bohunician, or Aurignacian as previously assumed (Flas 2011). Although there is the index fossil “Jerzmanowician point” of this industry, in the inventory of LRJ also occur bifacial leaf points, which could be characteristic both for Szeletian and Jerzmanowician. Often there is an assumption about the use of blank in the production of leaf points in these units, but Szeletian and Jerzmanowician are industries oriented on both blades and flakes (Flas 2011; Mester 2018). Establishing the blank from which the tool was made is not always possible in entirely bifacially retouched specimens. Additionally, there is the problem of preforms and fragments, which in some cases e.g. Kraków-Zwierzyniec I they prevail over not broken tools.

More than ten sites presented in this paper consist almost exclusively of only leaf points, so knowing the differences in terms of leaf points between Szeletian and Jerzmanowician is crucial to understanding both industries. Collected data here show significant morphological and technological differences among the specimens. Their length varies from 10.4 to 4.5 cm, and width between 7.5-2.6 cm. They can be divided into symmetrical, elongated, and more stocky and asymmetrical forms; they also differ in shaping the base: a rounded, pointed base or with tang or narrowing. It is essential also to consider used raw material; most of the artifact was made from flint, only leaf points from Oblazowa Cave, and one from Mamutowa Cave was made from radiolarite. However, a more detailed comparison is not possible due to a lack of information about raw material on all presented sites.

Recently the study of leaf points from Szeleta Cave and Jankovich Cave have shown that dimensions of the pieces vary between 2.4-4.4 cm in width and length between 3.3-7.7 cm; similar observation was made on the Moravian site, although it is not established rule in terms of Szeletian leaf point only initial observation (Mester 2018). Considering this remark, only four-leaf points presented in this article fit in these dimensions (Fig. 2.5-6, 6.1, 6.9).

VI. CONCLUSION

Szeletian in Poland is diverse especially looking from the point of index fossils – the leaf points, which are a highly morphological and technological diversified group even among one site (Mamutowa Cave Fig. 2). Similarities that can be traced pertain to raw materials; there is a visible preference for using the local ones on the most discussed sites. Similarities also are in

terms of blank production, prevail flakes over blades, and Middle Paleolithic tool types are predominant. However, the coexistence and mixing of Szeletian sites with other complexes with leaf points, small assemblages, and lack of information about context, cause a more detailed summary about this stage in research of Szeletian in Poland will not have much scientific value. What is visible is that Szeletian masks ample techno-typological heterogeneity. Lack of well-defined boundaries, especially in Poland between Szeletian and Jerzmanowician, causes often used terms interchangeably. What is so far missing, especially in the Szeletian complex, is looking beyond the leaf points – more closely at the technology of general tool production and blank production systems.

Furthermore, it will be crucial to compare Jerzmanowician and Szeletian tool types and study the strategies and blade debitage methods among these two industries to see if they are alike. Nevertheless, the first step needs to be re-assessment of available inventories to collect data about the tools, debitage, and raw material usage. With this database, we could compare and try to attribute Szeletian sites in Poland to one of two facies, the Early Szeletian or Late Szeletian, a distinction made on the analysis of Szeletian sites in Moravia and Slovakia (Kaminská *et al.* 2011). Obtained results will significantly impact the international discussion about the problem of transition between the Middle and Upper Paleolithic and will exhibit if Szeletian original features are limited to the domain of leaf points.

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