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Identifying seasonal settlement sites and land use continuity in the prehistoric southern Siberian steppe – Zhelvak 5 (Tuva)

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ABSTRACT

The identification of camp sites of Iron Age cultures on the Eurasian steppes has long been a problem as the traces of seasonal settlements are faint and often destroyed by agricultural activities. Recent research has found increasing evidence for less mobility and a larger role farming played in the mixed and locally adapted economies of peoples on the steppes. Here we present the results of the investigation of a settlement from the Uyuk Valley and contextualize it with data for seasonal camp sites and settlements in Iron Age South Siberia. Contrary to the long-held beliefs that Iron Age herding societies were truly nomadic and did not establish permanent settlements, archaeological research in South Siberia is gradually starting to reveal a different picture. Remote sensing and on-ground surveys uncovered six Scythian-period settlement sites in Tuva occupying southern hill slopes in sheltered topographic settings. Excavations at Zhelvak 5 revealed a stratified site with materials from the Bronze Age to the Late Iron Age and beyond. The archaeological material speaks towards continuity of economic exploitation of this landscape and the establishment of seasonal camp sites in the same place over a prolonged period of time.

1. Introduction

Traditionally, archaeological research on the Early Iron Age cultures of the Eurasian steppe belt have been defined by the paradigm of highly mobile nomadic pastoralists. Archaeologists have been focused on the visible changes in the material record and shown changes in social structures across the steppes during the first millennium BCE. The emergence of steep social hierarchies and high mobility has been epitomized in the description of the Scythian warrior nomad. The excavation of elite burial mounds and their rich material assemblages focused research on the upper strata of Early Iron Age societies. Burial mounds are by far the most conspicuous type of site in the archaeological landscape of the Early Iron Age steppe and thus the focus on these monuments – also bearing in mind the antiquarian origins of the archaeological discipline – is no accident. While a large portion of these sites have been disturbed (Caspari, 2020; Caspari, 2018), they are the most often excavated structure and remained the main source of archaeological information for the past decades of research on societies

of the Early Iron Age. This significantly skewed the data towards intentionally arranged assemblages created for the dead, often with a particular focus on social elites. The developments in the archaeological sciences have recently allowed a shift towards habitation sites which now produce supplementary data on economic activities which sometimes complement, but also call into question existing hypotheses. Recently, a growing body of evidence is calling into question the nomadic narrative, showing that mixed economic systems have been wide-spread in the steppes of the first millennium BCE (Spengler III et al., 2017; Rouse et al., 2022). The traditional concept of the early nomads has largely ignored the considerable variability and adaptability of economic systems across the Eurasian steppe belt. Depending on the ecological niche, agricultural practices have played a much larger role than previously assumed (Spengler III et al., 2016; Spengler III et al., 2017). But also the idea of high mobility has been challenged, as seasonal migratory patterns of transhumance are revealed through isotopic studies and ethnographic parallels in combination with remote sensing data (Gerling, 2015; Ventresca Miller et al., 2018; Caspari et al., 2017).

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While these studies are in their early stages, they seem to indicate that mobility has been more limited than previously thought (Spengler III et al., 2021). A nuanced interpretation of the emerging evidence is key to furthering conceptualizations of new narratives. The new evidence for sedentary agricultural practices among so-called nomads has also led to a reconsideration of the focus on elite burial mounds and their representativeness for the larger population. Archaeologists have started to consider the ephemeral remains of seasonal settlements and camp sites as important sources of information for the world of the living and as a contextualizing factor for the curated assemblages of elite burial sites. However, especially in the northern steppe zone, the identification of stratified settlement sites has remained difficult due to poor visibility and anthropogenic destruction (like e.g. attempts of Soviet agricultural land reclamation). This prompted the establishment of a project to survey the surrounding of one of the largest elite burial sites in Siberia – the “Valley of the Kings” in Tuva. Here we present the results of surveys and excavations revealing a long continuity and consistency of seasonal settlements throughout much of the era during which people on the steppe were supposedly highly mobile. This study serves to better establish ways to identify seasonal settlement sites in southern Siberia and the northern steppe regions in general.

2. Identifying settlements in the Turan-Uyuk valley in Tuva

In the 1st millennium BCE, Scythian-period cultures appeared in Tuva with the Arzhan horizon (9th /8th century BCE), as well as the Aldy-Bel (8th – mid-6th century BCE) and Uyuk-Sagly (mid-6th – 3rd/2nd century BCE) cultures. Closer to the turn of the eras, a change in the cultural tradition took place, and cultural groups of the Hunno-Sarmatian period started to develop (the Ulug-Khem and Kokel cultures). The general categorization of cultural units is well-established due to an abundance of materials from sepulchral complexes. Many years of research on barrow and flat cemeteries have produced a wealth of information concerning the burial rites, and the spiritual and material culture of populations inhabiting Tuva at the time. However, the idea that during the Early Iron Age people were living as full or true nomads, seasonally moving camps over large distances from region to region has remained very influential.

Traditionally, archaeologists were looking for prehistoric settlements primarily on the shores of rivers or lakes. In the valley of the Yenisei River and along its tributaries, settlement sites have been discovered and archaeologically investigated in central, northern, and north-eastern Tuva (Vainshtein, 1956, 37; Devlet and Studzinskaya, 1971, 187–188; Devlet, 1973, 211–212; Kyzlasov, 1979, 11–17; Semenov, 2018, 11–15). There are stratified sites, and the materials primarily comprise of fragments of ceramics which can be attributed to the Bronze Age. A model example of such a waterside settlement is Toora-Dash, where 13 layers were identified, spanning from the Neolithic to the Late Middle Ages (Semenov, 1992, 2018).

Already in the 1980s and 90s, archaeologists working in the Altai region neighbouring Tuva found topographical patterns which allowed for identification of previously unknown Scythian-period settlements (Shulga, 2015, 13–15). Among the places used by prehistoric peoples as winter camps, there were geographically sheltered positions in the landscape, surrounded from three sides by mountains, with a preference for slopes with a southern or south-eastern aspect, allowing for higher temperatures during the cold months of the year (Caspari et al., 2017; Jia et al., 2020). In locations far from rivers, water was provided by snow, and fuel was sourced from forests covering northern slopes. Livestock was grazed on southern slopes where there was less snow due to the sun exposition.

One such settlement was discovered in 2011 in Tuva in the “Valley of Kings” (Shulga, 2011, 267), showing the potential of the region to reveal such sites. From 2013 onwards, surveys for Scythian-period sites were conducted in the region by the South Siberian expedition of the State Hermitage Museum. We employed survey methods described in Shulga

(2015) and first developed in the Altai Mountains, in order to identify potential settlement locations. We then conducted test pitting and ultimately excavations. The efforts resulted in the discovery of several Early Iron Age settlements in the Uyuk Valley.

The surveys encompassed the southern slopes of the Kurtushibin range, to the north, west, and east of the villages of Arzhan, Chkalovka, and Tarlag, in the immediate vicinity of elite barrows of the early nomadic period (Scythian period): Arzhan 1, 2, and 5 (Griaznov, 1980; Chugunov et al., 2010; Rukavishnikova and Rukavishnikov, 2018), and Chinge-Tey I (Chugunov, 2011) as well as the Tunnug 1 mound to the south of the river Uyuk (Caspari et al., 2018; Sadykov et al., 2020). The permit for field research (No. 1127–2017) was issued by the Russian Ministry of Culture to N. Zhogova. All necessary permits were obtained for the described study, which complied with all relevant regulations.

The most comprehensively investigated area comprises mountain valleys to the north of Chkalovka and Arzhan. Six sites were discovered in the area: Zhelvak 1, 2, 3, 5, and 8, and Sandakin (Fig. 1). The sites lay no more than 3.5 km from each other, and no less than 1 km (in a straight line). Discovered on the surface of the sites were animal bones, fragments of prehistoric ceramic vessels, including ceramics belonging to the Scythian period, and objects dating to the 20th century. Test trenches were opened in three sites (Zhelvak 3, 5, and 8). In Zhelvak 3 and 8 a cultural layer containing Scythian period and medieval artefacts was recorded at a depth of 1 m. In the test trench in Zhelvak 5, artefacts were found at a depth of up to 1.6 m. Both in the trench and on the surface, fragments of pottery were found, representing the Bronze Age, the Scythian period, the Kokel culture, and possibly the Uighur period.

After a preliminary selection of promising locations in the landscape based on topographic setting, we carried out drone surveys and mapped the areas by means of geomagnetometry.

Aerial photographs reveal that habitation sites often manifest themselves as areas covered with dark green vegetation (Fig. 2). Lusher vegetation grows on top of the cultural layers. We hypothesize that the reason for this might have to do with increased nitrate and phosphate contents of anthropogenic layers and potentially the increased soil moisture in these sheltered setting between slopes of various aspects. Further research is necessary to investigate these relationships. The preliminary observation can, however, be useful for increasing the efficiency of seasonal settlement surveys in mountain valleys of southern Siberia.

The magnetic survey encompassed an area of about 5500 m² and recorded numerous anomalies (Oleszczak et al., 2020, 364–356). The visually discernable differences in ground cover are also visible in the magnetometry survey. Camp sites seem to be markedly different in magnetic data as the areas show an accumulation of remains of human activity, saturated with anomalies likely stemming from thermally processed material and dipoles hinting at buried metal items.

3. Ground-truth and excavations at Zhelvak 5

Regular excavations in Zhelvak 5 started in 2017. The site lies approximately 6 km north-west of Arzhan village and 5 km north-east of the sepulchral complex of Chinge-Tey I. It is situated at the foot of the southern slope of a steep mountain, and occupies an area in the head of the valley stretching along the NW-SE and surrounded by slopes. The boundaries of the site were identified visually due to plant anomalies. The site covered approximately 2400 m² in area, of which 48 m² in the northern part were explored (Fig. 3).

Zhelvak 5 is a stratified site. The material retrieved during the research consists primarily of ceramic vessels, which allow for the relative chronology of the site to be analysed. The earliest layer identified within the explored area was linked with the Okunevo culture (ca. 2500–1700 BCE) in Tuva. It contained single potsherds decorated in a manner characteristic of that culture: with horizontal rows of arc-shaped stamps (Fig. 4: 1, 2, 4–6) and impressions made with a tubular bone (Fig. 4: 3). The decorated potsherds (Fig. 4: 1, 2, 4–5) were recorded at a

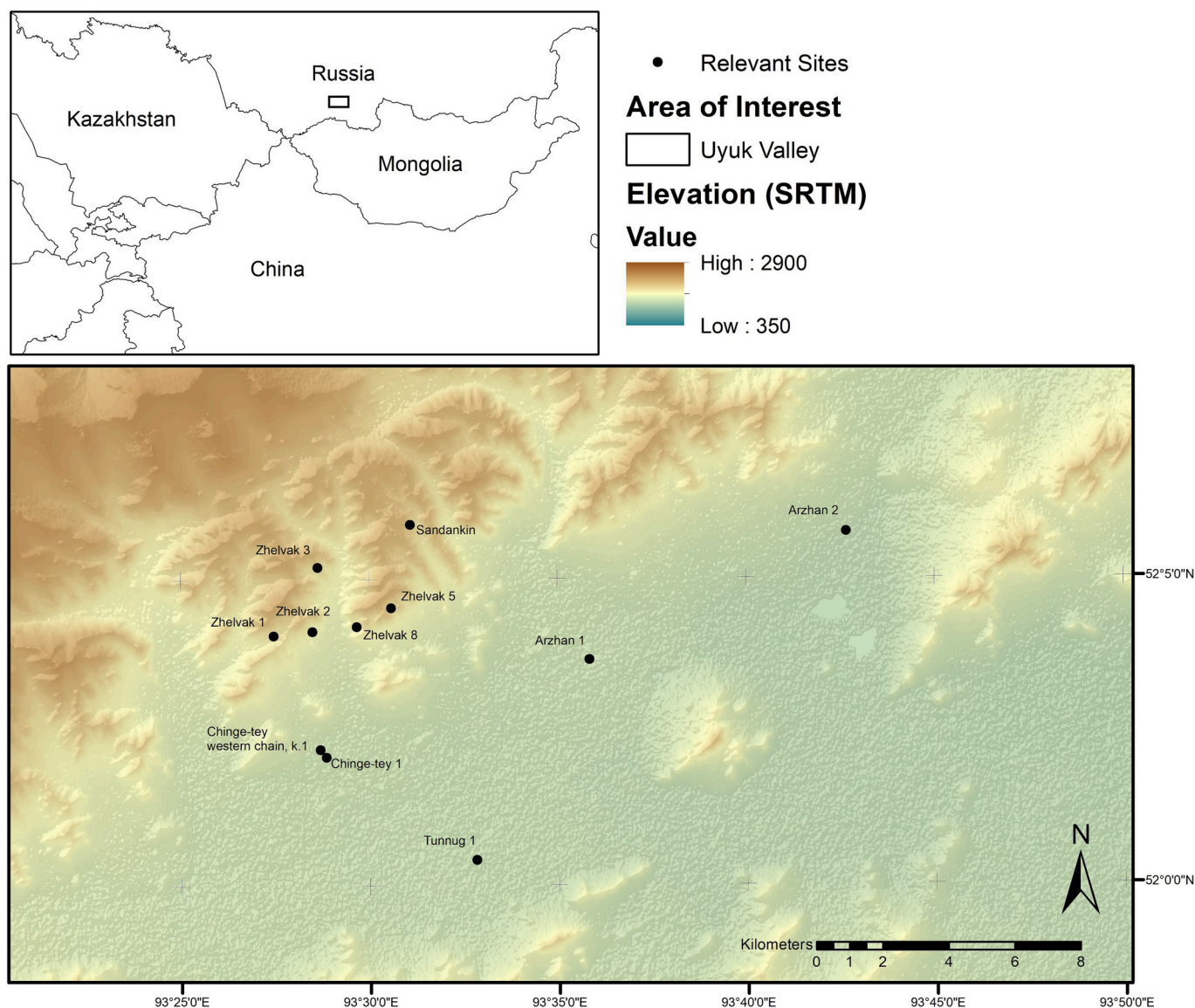


Fig. 1. Overview over key sites in the Uyuk Valley and newly recorded settlement sites in the foothills (Map created by G. Caspari using ArcMap 10.4 by ESRI. We acknowledge the use of SRTM 1 Arc-Second Global Digital Elevation Model).

depth of 1.35–1.45 m from the present-day ground surface. The only body sherd bearing impressions of a tubular bone was found in younger layers. The best analogies for these two types of pottery come from the cultural layer beneath the Arzhan-2 barrow and from the sites of Toora-Dash, Khadynykh I, and Etekshil I (Semenov, 2018, P. 149, 187, 274, 275, 352. Chugunov et al., 2006, p. 306, fig. 5, 7). A stone tool and fragments of pottery with comb impressions (Fig. 4: 7–10) are undoubtedly connected with the Bronze Age. Within the layer under discussion, of particular note was a small pit containing bones of a young sheep. In the lower horizons corresponding to the Bronze Age, fragments of ceramic vessels, a stone pestle, a pit with lamb bones, and one bone tool were discovered. The material is partially in situ and partially redeposited. The first group of ceramic finds consists of a series of fragmented vessels ornamented with arched stamp impressions and tube bone imprints. Ceramics with similar ornamentation have been found in the seventh cultural layer at Toora-Dash (Semenov, 2018, figs. 149–3, 181–4, 187–1), as well as in the cultural layer beneath the Arzhan-2 mound (Chugunov et al., 2006, figs. 4,12–15,5,7), and at the Kara-Orga, Hadynykh I, and Etekshil I sites (Semenov, 2018, figs. 274, 275, 351, 5,10; 352, 1–4). In Tuva, Okunev culture sites are synchronous with those from the Minusinsk Basin and are dated to the first half of the

2nd millennium BCE. Currently, there are only a few known sites of this culture, including ritual enclosures, burial structures, and settlements (Semenov, 2018, pp. 309–325; Lazaretov and Polyakov, 2018; Stambulnik and Chugunov, 2006). The second group of ceramics consists of fragments of smoothed vessels, which can be attributed to the Late Bronze Age. Until recently, sites of this period were mainly represented in Tuva by chance finds (Kyzlasov, 1979, fig. 19a). Only recently the Bay-Bulun 5 site, which contains layers from this period, has been studied (Semenov, 2021, pp. 84–95). The monuments of the Late Bronze Age, widely spread in the steppes of Kazakhstan and the Minusinsk Basin, have not yet been distinguished as a separate culture in the territory of Tuva because of limited data availability.

A layer associated with the Scythian period (ca. 850–250 BCE) was recorded at a depth of 1.0–1.35 m beneath the surface. The number of ceramic artefacts increases in this layer but primarily of undecorated body sherds. The finds also include sherds with burnished surfaces, red and black, originating from vessels of various forms (Fig. 5: 1–7, 9) decorated with cordons and, less often, so called pearl ornament (zhemchuzina). Of particular interest are remains of bulbous vessels with bevelled rims, decorated with flutes below the rim (Fig. 5: 1, 6). Such vessels find direct analogies in barrows of the early Tagar culture

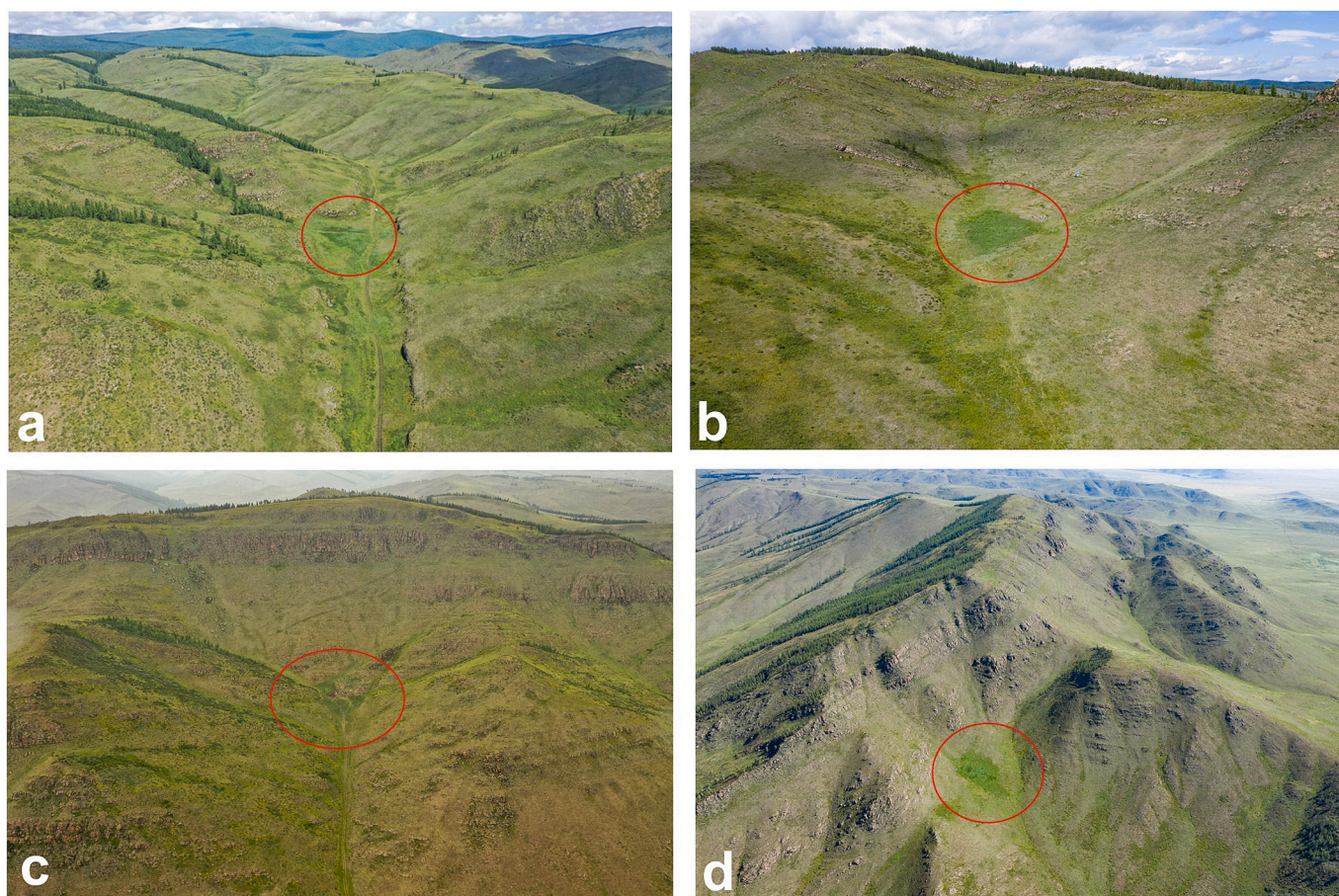


Fig. 2. Aerial views of seasonal settlement and camp sites on the southern slopes of Kurtushibinsk range. a) Sandankin; b) Zhelvak 3; c) Zhelvak 5; d) Zhelvak 8 (Photos by I. Pieńkos).

from the Minusinsk Basin, while they do not occur in burials of the Aldy-Bel culture in Tuva.

The layer yielded single finds: a fragment of a spindle-whorl (?) made from a body sherd (Fig. 5: 7); a fragment of a bronze bracelet (?) in the form of a curved rod with a pointed tip, a copper object resembling an arrowhead, possibly a tool, an object made from a tubular bird bone, possibly a needle-case (Fig. 6: 2); as well as pieces of unworked antler and antler semi-products (Fig. 6: 3–5). Of particular interest is a four-sided bone arrowhead with a slightly marked socket (Fig. 6: 1). It has one edge cut flat. The authors are not aware of any direct analogies for such an arrowhead. A somewhat similar find comes from house 5 from the Bronze Age settlement at Torgazhak (Savinov, 1996: fig. 2, 3). Four-sided bone arrowheads with inner sockets are known from Arzhan 1 barrow (Griaznov, 1980) and from Late Bronze Age sites in the Minusinsk Basin (Savinov, 1996: fig. 2).

Apart from the artefacts, the excavations revealed a compact cluster of stones in square N-16, 0.3×0.3 m in size and approximately 0.2 m in height. At a depth of 1.1–1.2 m, the edge part of a feature with remains of decayed wood was uncovered, 1.0×1.8 m in size (in squares N-15,16). In the cross-section, the feature consisted of a series of alternating layers of decayed wood and humus, 15 cm deep in total. In the north-eastern part a fragment of a wooden plank with a groove was found. Found within the feature were animal bones, a piece of birch bark, tiny pieces of charcoal, base sherds from a red-surfaced vessel, and rim sherds from black-surfaced vessels. In terms of the ceramic mass, the red-surfaced sherds find analogies among sepulchral pottery of the Uyük-Sagly culture.

To the north of the feature, in squares H-13 and H-14 a stone enclosure 0.9×0.75 m in size was discovered at a depth of 1.0 m,

composed of three slabs (Fig. 7). The discovery of a Scythian-period buckle within the enclosure suggests that the stone structure itself and the layer in which it was found should be dated to this period. However, a later date of the enclosure is also possible. Inside the feature, a rim sherd and a fragment of a unique, carved antler buckle were found (Fig. 7: 9). Another sherd was discovered below the level of the enclosure, in an animal burrow. No traces of fire were recorded, and no bones (neither charred nor uncharred) were found. The fill of the enclosure was disturbed by burrowing animals. The rim fragment, which was decorated with triangular stamp impressions (Fig. 5:8), resembles pottery of the Late Scythian period. However, the authors know no examples of such ornamentation on pottery from Tuva, neither on Scythian-period vessels nor on those belonging to the Hunno-Sarmatian period.

4. Evidence for early Iron age economic and cultural activities on site

Together with the Early Iron Age ceramics, an artefact was found which is of particular interest in establishing the presence of proponents of Scythian material culture: An antler belt buckle, carved with the image of a feline predator (perhaps a lion), with a head of a ram beneath its mouth (Fig. 7: 9). The plaque has a width 6 cm, length 6.8 cm, and thickness 0.4–1.2 cm. Raw material used for the manufacturing of this buckle was antler of a red deer. Observable on the reverse of the plaque are the fibers of the spongy tissue stacked on the Y-shape pattern. The antler was split into separate pieces and then the ornament was carved on the exterior. The same technology of antler belt buckle manufacturing was recorded on plaques from Sagly-Bazhi II (Tuva) (Fig. 7: 1), Tuyakhty (Altai), and the buckle from the Gulyaev collection

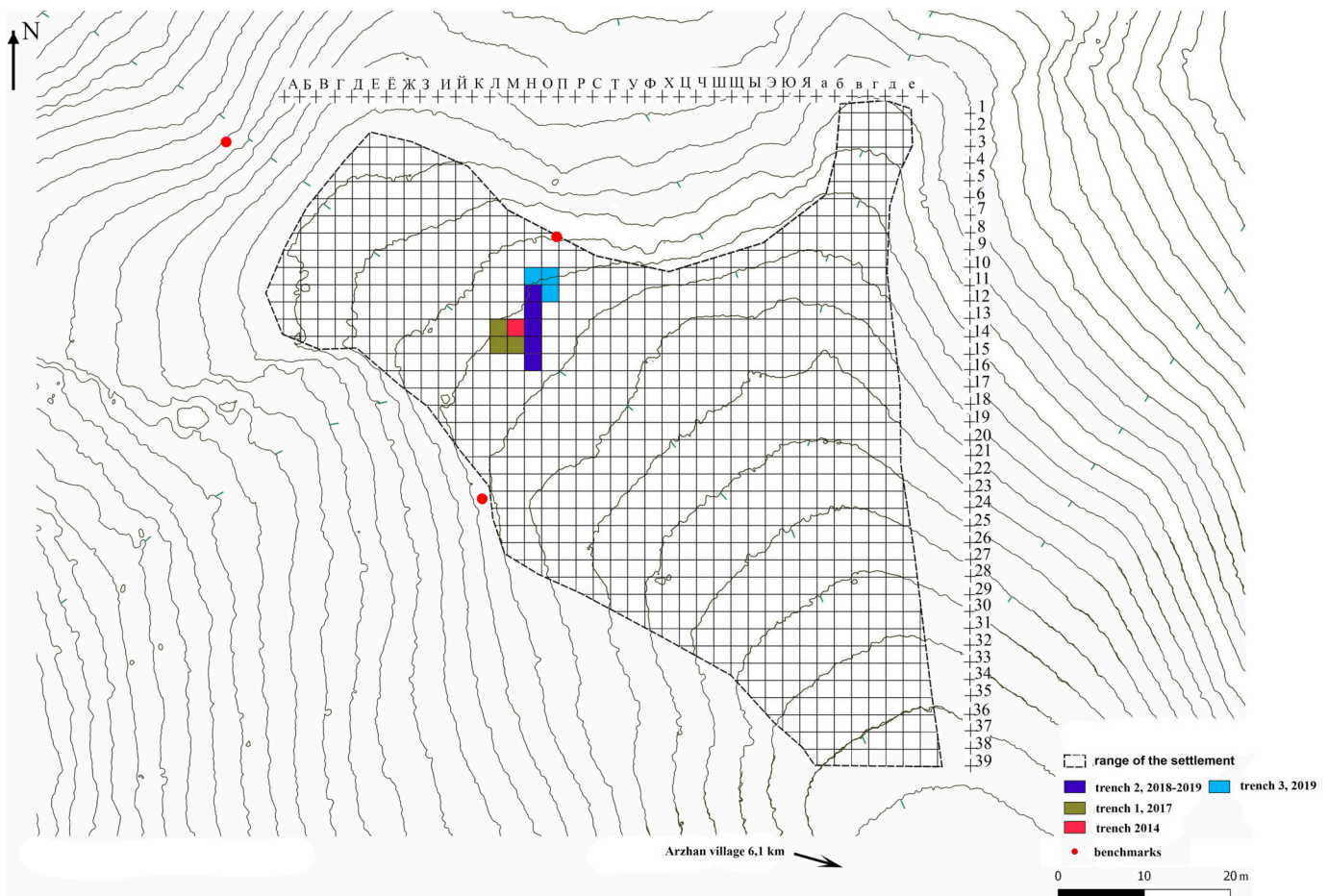


Fig. 3. The site outline based on visually determined differences in vegetation cover including the excavated areas in the Northwest.

(Fig. 7: 3) (Borodovskij, 2007, 119).

Motifs of feline predators with the head of their prey, often a ram's head, occur in the Central Asian art since the 6th/5th century BCE (Bogdanov, 2006, 61) as the subtype of the attack scenes in Scytho-Siberian animal style. They can be observed not only on bone/antler carvings, but also on bronze decorations, wooden plaques, sarcophagi, bronze mirrors and other items. Tigers with the heads of their prey were depicted on the wooden Bashadar sarcophagus (Fig. 7:7; Rudenko, 1960, fig. 21). Basing on this representations N. L. Chlenova suggested that this motif has an Altaic provenance (Chlenova, 1967, 137). However, the largest number of such motifs are depicted on the bronze belt buckles found in Central Asia and China. According to A. A. Kovalev there is no reason to limit the origin of this particular iconography to Altai (Kovaliov, 1999, 76). The bronze plaque from Askiz (Minusinsk Basin) (Fig. 7: 8) dated back to 6th/5th century BCE could be a good representation of these analogies. The same theme can be observed in the art of the Tagar culture on bronze plaques and stone stelas (Chlenova, 1967, Pl.17: 2-3, 35: 2). Another known representation of this motif can be found on the bronze mirror from Mazhalyk-Khovuzu I (Tuva) (Fig. 7: 6, Grach, 1980 fig. 113: 2). This motif was also adapted in Chinese art. A nephrite plaque of similar decoration, dates back to Han dynasty (3rd c. BCE – 3rd CE), is considered a symbol of “the West” (Chlenova, 1967, 137). However, such an iconic representation is rare among antler belt buckles. In terms of form and ornamentation, a close analogy to the Zhelvak 5 plaque is the belt buckle depicting a horse from Sagly-Bazhi II (Tuva) (Fig. 7:1, Grach, 1967, fig. 12). Korolkova dates this artefact back to the 5th–4th century BCE (Korolkova, 2006, 239). Another antler buckle of similar type was recorded in kurgan 3 in Dagan-Teli I (Fig. 7:3, Grach, 1980, fig. 62: 1). This one is depicting a feline

predator with two prey animals which look like a ram and a sheep. The plaque is dated back to the late phase (Ozen-Ala-Beligsykyi) of the Uyuk-Sagly culture, dated to 4th-3rd century BCE (Kovaliov (1999, 75) or 3rd-1st century BCE (Kilunovskaya and Leus, 2017, 88). Korolkova gives a narrower dating of this artefact – 3rd-2nd century BCE (Korolkova, 2006, 239). Both analogies (Sagly-Bazhi II and Dagan Teli I) were found on the central part of the belt of the deceased, which leaves no doubt about the function of these items (Grach, 1980, 35). The image of the feline with a ram's head is also present on the piece of the antler belt buckle found in feature 5 in Sulug-Khem (Tuva) (Fig. 7:4, Semenov, 2003, Pl. 56: 29). This plaque is dated back to 5th-3rd century BCE (Semenov, 2003, 129). One more analogical representation was depicted on the antler belt buckle from kurgan 2 in Saldan I (Tuva) (Fig. 7:5, Norbu, 1980, fig. 16; Bogdanov, 2006 Pl. LXXIII: 1). Details of this image are very blurred due to the bad state of preservation, which makes the interpretation of details of the style difficult. Two more antler plaques from Altai – from Tuyakhty and from the Gulyaev's collection (Fig. 7: 3), should be considered analogous as well (Borodovskij, 2007, 90–91). All the antler belt buckles have individual patterns but represent the same art style.

On the belt buckle from Zhelvak 5, and the listed related antler plaques, the body of an animal is filled with curvy grooves; this has been interpreted as a symbolic representation of the animal hair and muscles (Artamonov, 1973, 162). Such ornamenting could also be observed, among other things, on the figurine of the ram from Aimyrlyg (Tuva) (Griaznov, 1992, 175). The style, where the main part is surrounded by repeatedly copied shapes and contours and where compositions are inscribed into each other has been referred to as the “mysterious picture style” (stil' zagadochnoy kartinki) by Russian scholars (Kadyrbaev,

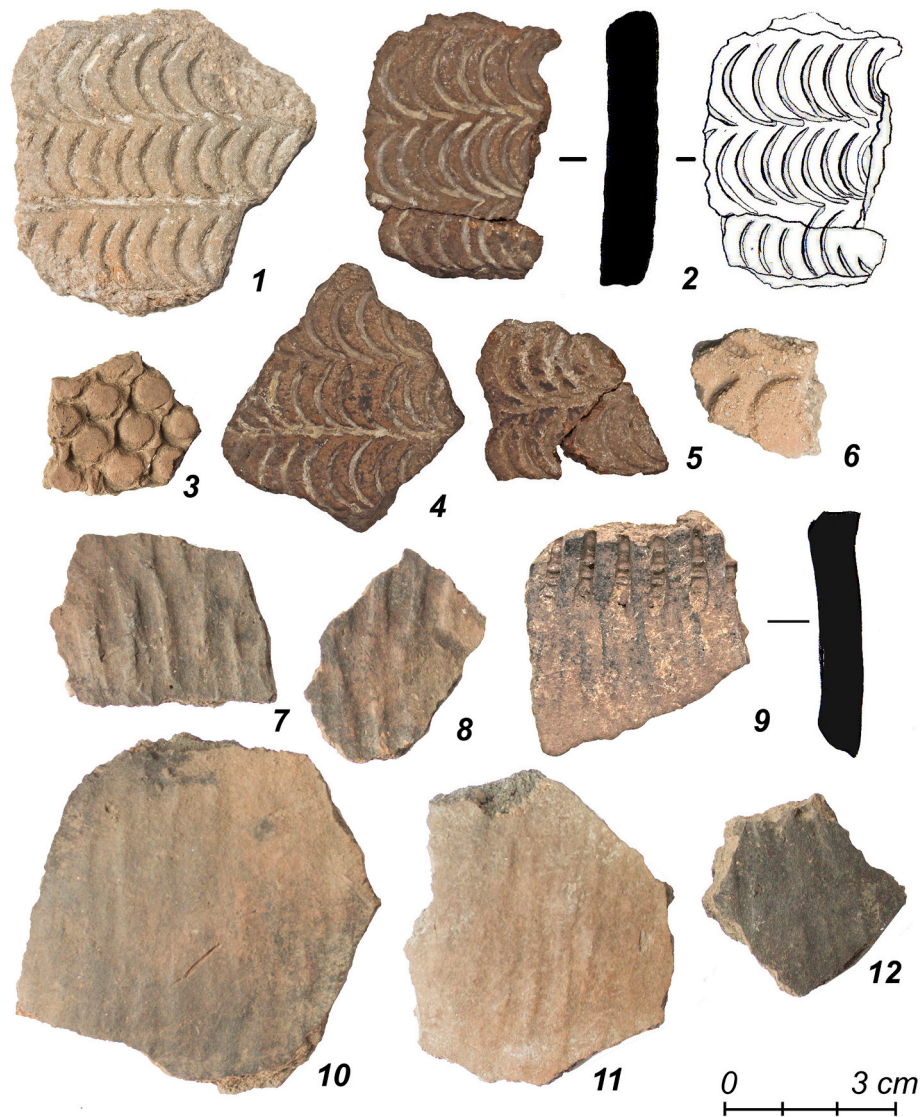


Fig. 4. Decorated ceramic finds from the Zhelvak 5 site.

1996, Grach, 1980; Savinov, 2012, 50). Representations of this style where described as a result of the local, not imported, tradition (Grach, 1980, 77). According to Artamonov, with regard to the Altaic animal style, such ornamentation is characteristic of the 3rd century BCE (Artamonov, 1973, 163). Another common feature of these representations is the comma-shaped or tear-shaped ornament on the bodies of the animals. Most known feline representations are characterized by a tear-shaped eye. The round eye depicted on the Zhelvak 5 buckle is rather unusual. Among the characteristic features of the Zhelvak 5 buckle, one can highlight representation of paws without claws, a half-opened mouth, rounded ear and mane. Listed representations of felines on the bronze and other antler belt buckles have features characteristic to a tiger or panther type. However, details of the animal body depicted on the Zhelvak 5 buckle, in particular the mane, seems to hint that this could be a lion rather than another feline species.

Due to the fact that the Zhelvak 5 buckle is not fully preserved, the fastening method cannot be reconstructed with certainty. The remains of the hole, which was made for fastening the belt, is visible on one side of the artefact. On two analogical antler buckles (Fig. 7: 1, 4) two additional little perforations are visible close to the big round perforation. Moreover, on the fully preserved buckles one can observe one or two little perforations for fastening on the other side of the buckle (Fig. 7:1–3). The Zhelvak 5 buckle lacks the little perforations in the

front but it has a round notch on the bottom part, which might be connected to a different technique of fastening the buckle. The comparative antler belt buckles have almost the same form and dimensions.

The listed analogies, form of the artefacts, and the style allows us to date the belt buckle from Zhelvak 5 to the 5th-3rd century BCE. With this date we are clearly in what is usually referred to as the era of highly mobile nomadic pastoralists.

Developed antler working at the Zhelvak 5 settlement is confirmed also by half products and waste found in the cultural layer. One of them is a piece of red deer antler (11 × 7 cm) chopped off with a metal tool (Fig. 6: 5). Such a thick half product could be used for manufacturing large range of items (tools, horse harness pieces, decorations and others). Another half product is a part of an antler beam (5 × 1.5 cm) sharply chopped on one side and two pieces of burned antler. An ovoid antler piece (1.8 × 2.3 cm), which is probably a half product used to fasten straps (Fig. 6: 3), perhaps part of a horse harness. Antler piece of the same dimensions, with a perforation in the middle is known from Aragol' barrow mound (Rudenko, 1960, Pl. XXII: 12). The raw and half-finished products on the site clearly show economic activities such as antler and bone carving.

Animal style art is part of Scythian triad, which means it represents one of the three main spheres of material culture of Scythian type groups

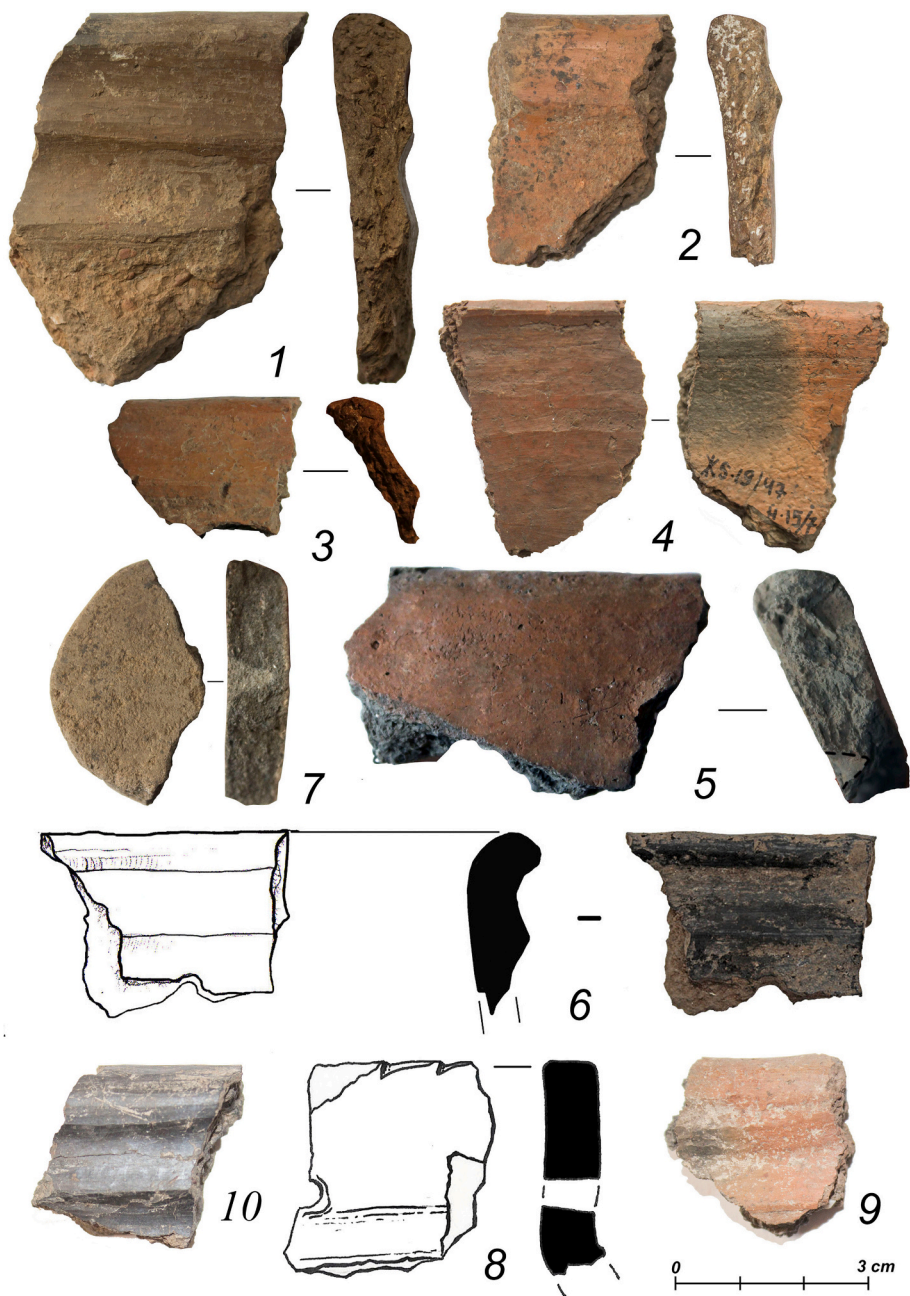


Fig. 5. Ceramic finds from the Zhelvak 5 site and its Scythian period layer.

(Grakov and Meliukhova, 1954). One popular motif in animal style, recorded over vast areas from Central Asia to Eastern Europe, is that of fighting animals (so called animal fighting, combat or attack scenes, Russian: *terzanie*) (Troitskaya, 1997; Bogdanov, 2006, 82). In these depictions, a predator (sometimes a mythic animal like a griffin) mauls an herbivore (e.g. a horse, deer or ram). Although the feline predator depicted on Zhelvak 5 artefact in question is not actually mauling the ram represented between its head and frontlegs, this iconographic composition, with a marked dominance of a carnivorous animal over an herbivore, is a clear reference to the attack scenes. These scenes have been interpreted as representing the nomadic peoples' dominance over settled agriculturalists or within the framework of hunting magic (V.A. Koriennyako, after: Bogdanov, 2006, 29). The scene is executed in the previously mentioned “mysterious picture style”. Introduced by A.D. Grach (Grach, 1980, 78), this term indicates a composition of a zoomorphic scene in which the outline of one animal figure fits perfectly

within the outlines of another animal. Such compositions are primarily known from the Aldy-Bel culture of Tuva and from the Tasmola culture of Kazakhstan (Bogdanov, 2006, 76; Savinov, 2012, 49–51).

5. Kokel culture burial

In the northern part of the investigated site, the layer from the first half of the 1st millennium CE (Hunno-Sarmatian period) produced materials of the Kokel culture, widespread in Tuva in the 2nd century BCE-5th century CE (Sadykov et al., 2021; Pawelczyk et al., 2022). The layer contained body and rim sherds from undecorated and decorated vessels. The decorated fragments have numerous analogies in the materials of the Kokel culture in Tuva (Vainshtein, 1970; Vainshtein and Diakonova, 1966; Sadykov et al., 2019). An extremely well-preserved grave from this time period including many organic remains was found in the vicinity. The outlines of the pit became discernible 1.5 m

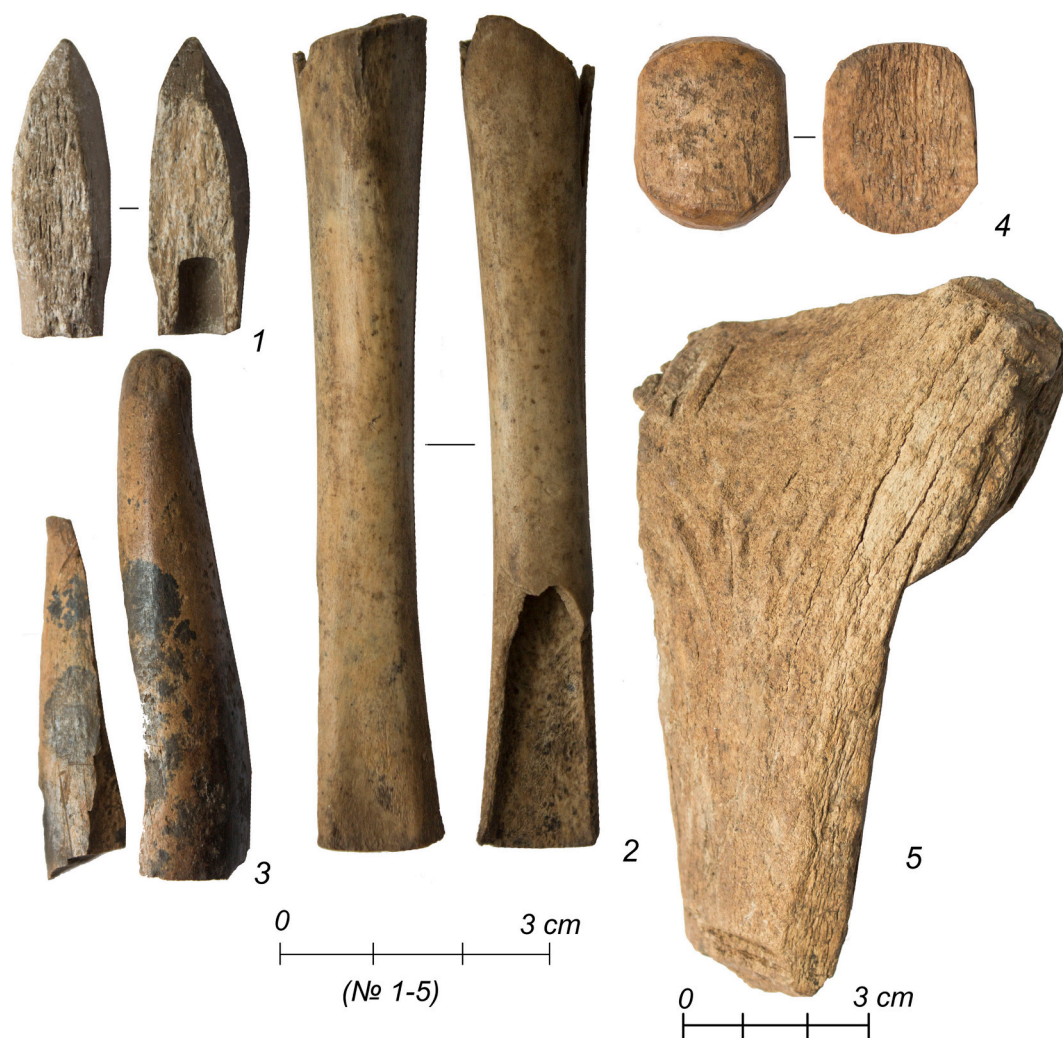


Fig. 6. Bone and antler finds from Zhelvak 5 (Scythian period layer). 1) arrowhead; 2) needle-case (?) from a tubular bone; 4–5) antler semi-finished products.

beneath the surface. The pit was oval in plan, 2.4×0.7 m, stretched along the NW-SE axis. The fill contained large pieces of charcoal.

At a depth of 0.4–0.35 m beneath the pit's top, a timber coffin $2.1 \times 0.4 \times 0.37$ m was uncovered, with four large stones lying on it: three above the head and another one above the legs of the deceased (Fig. 8). The stone over the legs featured a carved decoration in the form of hollows arranged in an irregular circle.

The inner surface of the wooden coffin was lined with a woollen fabric, impressions of which survived on metal plates (Fig. 8) nailed to the planks. An exact analogy can be found in a Kokel burial excavated in the periphery of Tunnug 1, where iron coffin nails were found with textile impressions (Sadykov et al., 2021, fig. 11). A timber boarding was created along the perimeter of the grave to prevent the structure from being damaged during the excavation and documentation.

At the bottom of the grave, a skeleton of a man 40–50 years old was lying in situ on its right side, with the head to the WNW. The legs bent at the knees and the arms stretched along the body (Fig. 8). In the vicinity of the head, neck, and feet, the burial was disturbed by animal burrows. Beneath the skull, a gold foil fragment was found, most likely a hair adornment (Fig. 9:2). Another golden jewellery piece (Fig. 9:1), possibly originally placed near the skull might have been moved by rodents as it was discovered outside the grave. Stylistically, it fits well with Kokel jewellery finds from Tunnug 1 (Sadykov et al., 2021, fig. 17:536)

The deceased was equipped with three iron knives. One was lying on the left pelvic bone (Fig. 10:2), and two near the knees (Fig. 8). An iron dagger was uncovered above the pelvis (Fig. 10:4). The artefacts had

remains of wooden scabbards preserved on them. One iron buckle was found near the right elbow (Fig. 10:3), and another beneath the last lumbar vertebra (Fig. 10:1). In addition, a number of corroded iron artefacts were found among the bones, whose functions cannot currently be properly determined. They might have been dress items or personal accessories. Behind his legs, a set of artefacts was discovered along the eastern wall of the grave, consisting of a bone plate possibly from a bow, iron arrowheads with remains of wooden shafts, a horse bridle (Fig. 9:3), and further objects of unknown function. An iron cauldron on a support, with two handles (Fig. 9:4), was placed by the legs, and joint leg bones of a ram (ritual food) were lying nearby (Fig. 8).

Fragments of fabric and fur are preserved on the iron objects originally belonging to the clothing of the deceased. The distribution of the artefacts and the traces on them suggest that he was buried in trousers, while his shoes and outerwear were made of fur. Thanks to the great preservation of the wooden coffin, its construction could be recorded. The coffin was installed on two transverse birch logs. It was built of solid larch boards, with the lid, the side boards, and the end boards joined using mortise and tenon joints. The bottom was made from two planks, which had three pairs of rectangular holes for fastening one to the other. The manner in which the bottom planks were joined with those of the walls remains unclear.

Taking into account the burial rite and the composition of the burial inventory, the grave can be clearly associated with the Kokel culture (2nd – 5th century CE). The closest analogies to the artefacts from that grave can be found in the Kokel cemetery in the periphery of Tunnug 1



Fig. 7. (left) Site plan with stone enclosure and Early Iron Age belt buckle. (Right) Scythian animal style antler belt buckle and comparative motifs from other sites in southern Siberia. 1) Sagly-Bazhi II (Tuva); 2) Dagan Teli I (Tuva); 3) Gulyaev's collection; 4) Sugluk-Khem (Tuva); 5) Saldam I (Tuva); 6) Bronze mirror from Mazhalyk-Khovuzu (Tuva); 7) Wooden sarcophagus from Bashadar (Altai); 8) Bronze plaque from Askiz (Minusinsk Basin); 9) the buckle from Zhelvak 5.

(Sadykov et al., 2021) and in western Tuva (Vainshtein and Diakonova, 1966; Vainshtein, 1970). Burials within settlements were previously known from the Kokel culture from two other sites: Azas I and Katylyg (Sadykov, 2018). At the present state of research it cannot be determined whether settlement burials were common for the people associated with the Kokel culture. While large cemeteries are known (Kenk, 1984; Sadykov et al., 2021) the third instance, described here, seems to at least indicate an occasional practice of burying deceased within or close to camp sites.

6. Later periods

Materials retrieved from the upper layers suggest the location saw activity during Medieval and up to the modern period. Two fragments from the upper parts of clay vessels, most likely dating to the time of the Uyghur Khanate (8th–9th centuries CE) were found. An iron pin with the head in the form of twisted horns has an analogy in an artefact recovered from the Irba-2 site in the south of the Krasnoyarsk Territory, dating to the Kirgiz period (Amzarakov et al., 2017, 149; fig. 15: 1). Other materials associated with the late layers include two types of pottery: black vessels with diagonal incisions on the rim and fragments of thick-walled vessels decorated with comb imprints. The sherds often have traces of limescale and carbon residue on their inner and outer surfaces. No unequivocal comparative material can currently be demonstrated that would allow for precise dating of such pottery. The topsoil layer produced metal objects from ethnographic times. The upper layers of Zhelvak 5 settlement yielded materials indicating that the site was used

for a long time, up to the 20th century, indicating a long-term consistency in landscape usage.

7. Settlements from the Turan-Uyuk Valley against the backdrop of Iron Age settlements in south Siberia

Contrary to a common assumption positing that prehistoric herding societies never established permanent settlements and can only be investigated through cemeteries and perhaps some ephemeral, seasonal camps, archaeological research in South Siberia is gradually starting to reveal a different picture. Some scholars have even stated that the research potential of Early Iron Age sepulchral sites has been basically fully exploited as far as our understanding of the prehistoric economy and ethno-cultural situation is concerned. The investigation of settlements offers the promise of producing new data on economy, lifestyles, and crafts of the Early Iron Age (Shulga, 2015, 9). With regards to settlement sites in South Siberia, the best-researched region is the Altai. Altaian Early Iron Age settlements were already studied in the 1950s by B.H. Kadikov, and scholars like V.I. Molodin (Molodin and Petrin, 1986), Abduganieev (1992, 1998) and Kireev (1987) continued the research through the 1980s and 90s. Owing to the most recent advances in studies on Altaian settlements (Shulga, 2015; Soyonov and Konstantinov, 2016; Caspari, 2019), the Altai has become a model example for the research potential of settlement studies. In an extensive monograph, P.I. Shulga (2015, 17) lists 226 settlement sites (including traces of herders' camps, and strongholds), which cover a timespan from the Neolithic to the Middle Ages. His research demonstrates that the time when the Altai was

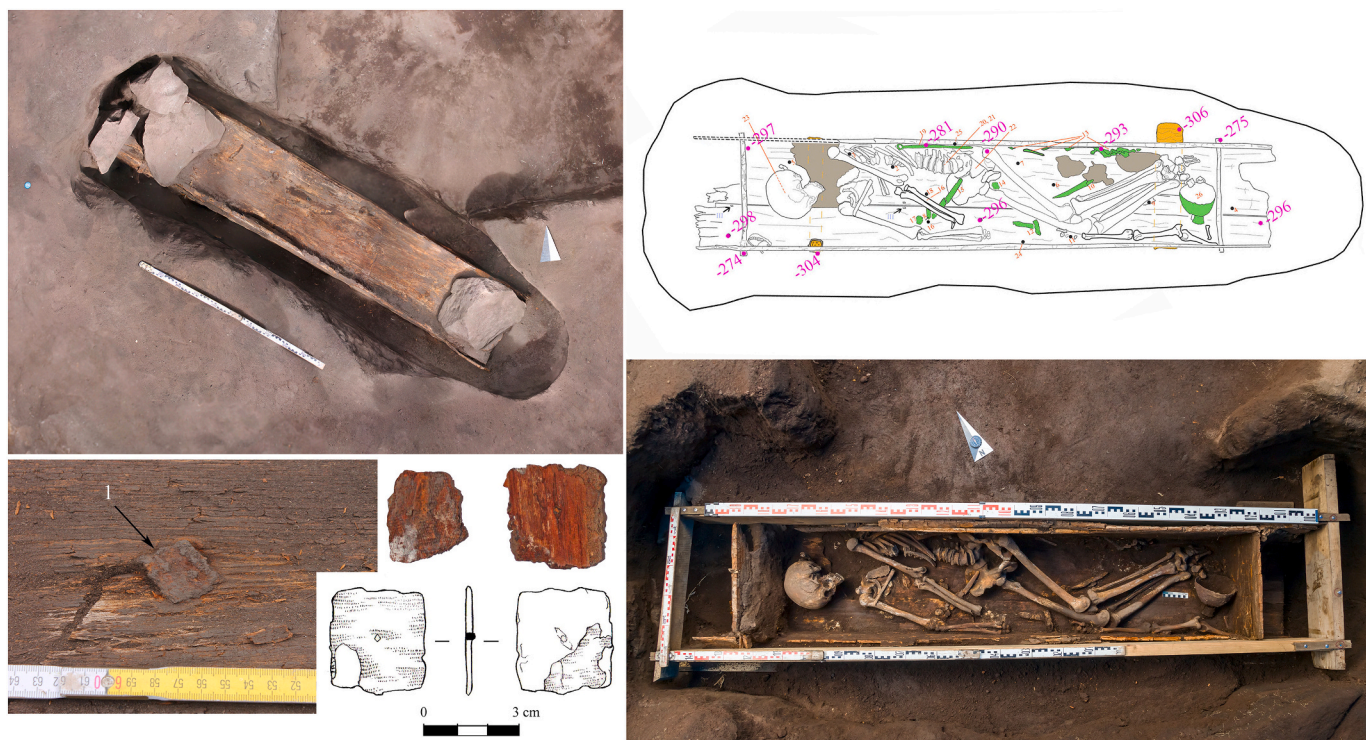


Fig. 8. (Upper left) The coffin lid is weighed down with stones. (Lower left): The coffin was initially covered with a textile leaving imprints on the nails. (Right): The uncovered Kokel burial with a male person of 40–50 years. Green: finds. Orange: birch wood support.

most intensively settled was indeed the Early Iron Age (133 settlements) (215, 17). He divides these sites into farming and herding settlements (Shulga, 1990, 1994). Of course, another criteria of division can be used as well: into open and fortified settlements. The latter include strongholds established on river terraces and those occupying promontories slightly further from the riverbed (although typically still within river valleys) (Soyonov et al., 2011). Strongholds built on promontories are regarded as more typical of the Scythian period, even if they are also known from the Xiongnu-Xianbei-Rouran period (with Chultukov Log 9 in the mountain valley of the Lower Katun' River as a good example – see Oleszczak et al., 2017).

Pastoral communities typically move in a closed annual cycle, returning each year to the same camps. Open cycles, in which a group migrates to new, previously unused pastures, are exceptions, and are most often undertaken under external environmental or social pressure. It is reasonable to assume that a group of people returning each year to the same place would start to create some infrastructure there from primitive shelters to semi-sunken dwellings or solid log houses, and even starting to protect the site with a ditch or palisade. Such camp sites were inhabited for several months of the year and the daily activities, occupation, and the crafts performed there resulted in the creation of a cultural layer. The excavations of the above-mentioned Chultukov Log 9 settlement in the northern Altai (Maima culture, 4th – 6th century CE) showed that the settlement structures recorded on site were formed by such a process. The isotope analyses of N15 and C13 in animal bones, aimed at reconstructing the ways of livestock herding, point to a pattern typical of pastoralists with herds moved to different pastures rather than grazing only near the settlement. Another argument is the lack of water sources – the site could only be inhabited during winter months, when water could be obtained from snow. Thus, we have evidence of a mobile pastoral community inhabiting a permanent settlement protected by a ditch and a palisade (Oleszczak et al., 2017, 172–173). Despite the fact that currently only limited structures have been excavated at Zhelvak-5, it seems likely, that the location was used in a comparable way as a seasonal camp site during winter time. The southerly aspect of the area

leading to increased temperatures during the cold months of the year, as well as the sheltered position in the landscape away from the main wind directions up and down the Uyuk valley would have made this a place an ideal holdout place for a small group of people. The lack of water sources, however, would have made living there throughout the year rather inconvenient. The main factors needing to be considered when searching for prehistoric settlements in the steppe are local topography and microclimates in combination with seasonal patterns (Caspari et al., 2017). As a result, the basic patterns behind the choice of locations for settlements remained relatively unchanged from the Eneolithic to the modern period (Shulga, 2015, 13). Zhelvak 5 yielded occupation traces form the Bronze Age throughout the entirety of the Iron Age all the way into the ethnographic period (Fig. 11). Occupation by pastoralist tribes of the same places over centuries, or even millennia, is becoming a commonly recorded phenomenon and seems to hint at an increased stability of transhumance patterns and landscape usage.

The discoveries of long-lasting settlement structures are often connected with agricultural activity in the economy of the prehistoric communities. There is increasing evidence that the tribes of the Early Iron Age traditionally associated with a pastoral economy, complemented their subsistence systems by means of agricultural activities, harkening back to the concept of multi-resource nomadism (Salzman, 1972; Salzman, 2018). Anthropological analysis of teeth of proponents of the Pazyryk culture in the northern Altai Mountains, has been used to argue that the diet included much more plant products than originally assumed (Borodovsky and Tur, 2015). Querns and other stone tools found in the settlements of the same area, for example at the Chultukov Log-9 settlement, indicate a similar reliance on agricultural products during the Xiongnu-Xianbei period (Oleszczak et al., 2017, 174). There is also mounting evidence that the population associated with the Tagar culture in the Minusinsk Basin practiced agriculture during the Scythian period (German et al., 2020). The archaeological record from the Tagar culture encompasses tools used for farming-related activities. A deposit of 200 bronze sickles (Chernikov, 1960), plough marks and irrigation canals, grain deposits in graves, stone graters and querns (German et al.,



Fig. 9. 1) gold jewellery piece; 2) gold foil fragment, possibly hair ornament; 3) bridle; 4) iron vessel. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

2020), deposits of barley (*Hordeum* sp.) and millet (*Panicum* sp.) (Martynov, 1979; Ryabogina, 2006), deposit of grain grinder (Amzarakov et al., 2015) etc. indicate a significant role agriculture played just north of the investigated area. Towards the south, in Mongolia, evidence for both pastoral and agricultural production has been described for the Xiongnu period e.g. on the basis of the materials from Egiin Gol (Wright et al., 2009, 385–386). In addition, isotopic data confirm the consumption of millet already in the Late Bronze Age Karasuk population from Khakassia (Svyatko et al., 2013). The isotopic analysis of human remains from the Karasuk and Tagar populations show a decrease in the amount of animal protein and an increase of the portion of cereals in the human dietary regime (Svyatko et al., 2013; Svyatko, 2014). Similar isotopic evidence is also emerging from Tuva (Milella et al., 2022; Murphy et al., 2013) and across the western Eurasian steppes more broadly (Ventresca Miller et al., 2019; Ventresca Miller et al., 2021). Small-scale forms of agriculture were very likely practiced in Early Iron Age Tuva as well. By the end of the “Scythian” period in the 3rd/2nd

century BCE, people linked to Xiongnu cultural traditions engaged in agricultural activities in the floodplain of the Yenisei River in Central Tuva (Chugunov, 2020). A large part of the Early Iron Age economy relied on herding, which is shown by both the results of the isotope analyses (e.g. Murphy et al., 2013; Svyatko et al., 2013) and the large number of bones of domesticated animals retrieved from the settlements, but our concepts of pastoral economies are becoming more nuanced, integrating practices like seasonal transhumance and the possibility that only parts of the population moved on a regular basis. Seasonal pastoral movements and in particular the associated winter time settlements justified the creation of permanent infrastructure and resulted in the accumulation of cultural layers.

Socio-economic factors, however, might also have influenced the choices for settlement locations. While evidence for widespread violent conflict in the Uyuk valley is not firmly established for the Early Iron Age, it is certainly a reality for the first centuries CE in particular for proponents of the Kokel culture (Milella et al., 2021). This might be an



Fig. 10. Iron knives and wooden scabbards in the burial.

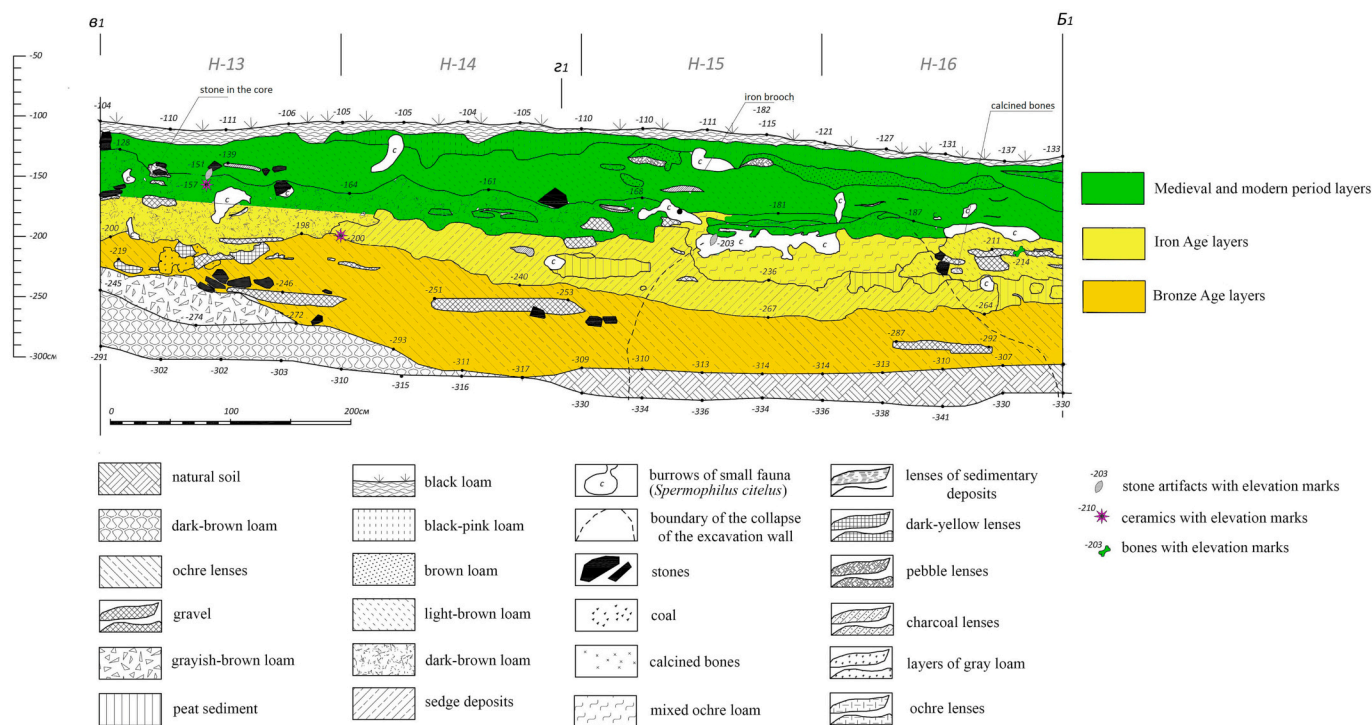


Fig. 11. Stratigraphy of the Zhelvak 5 site indicating Bronze Age, Iron Age, and Medieval to modern period layers.

additional explanation for the apparent preference for protected locations, which required efforts in fortification. The promontory settlements of the Altai are often only accessible from one side which was fortified by a ditch or a palisade (Soyonov et al., 2011, 262). This was also the case in the settlement from the 3rd – 5th century CE in Chultukov Log 9 (Oleszczak et al., 2017). Whether similar structures can be found in the Uyuk valley remains to be seen.

The methodology of settlement studies developed by archaeologists working in the Altai is proving to be productive in Mongolia and Kazakhstan as well. In Kazakhstan, settlements in similar locations appear as early as in the Tasmola culture (Beisenov et al., 2016; Beisenov et al., 2021) of the Early Scythian period. These sites have stone fortifications, and occupy southern slopes of the mountains and resemble encampments of Kazakhstan herders, known from ethnographic sources. Research in the eastern regions of central Kazakhstan resulted in the discovery of around 70 settlements from the Saka period (Beisenov, 2021, 183). According to Beisenov, these settlements were inhabited during winter months (Beisenov, 2016, 120), so the situation might be similar to that recorded in the Altai. It seems likely that this was also the case with the settlement from the Uyuk Valley analysed in this paper. Research conducted on the Xiongnu campsites in Mongolia clearly showed, that there is consistency and continuity in choices of campsite location beyond individual chronological periods (Honeychurch, 2013, 313). It is a significant observation that the tribes inhabiting Southern Siberia and Mongolia, were often choosing to establish camp in locations which had been used for generations (Wright et al., 2009, 385). While this might be due to environmental parameters like sun and wind exposure, pasture quality and precipitation, intertribal warfare might have also played a role in choosing sheltered locations. Winter campsites of Xiongnu tribes have been established in areas sheltered from the north-west, on the moderate slopes. The continuity of settlement patterns is even shown beyond the first centuries CE as archaeological research at Baga Gazaryn Chullu (Mongolia) demonstrates. Campsites dated to the Kitan-Liao (10-14th century) and the Turkic period (6-9th century) were recorded and showed the significant parallels in the settlement locations' characteristics in comparison with earlier periods (Wright, 2016, 140–144). The seasonal nature of these

campsites can be argued with isotopic analyses of domestic animal remains, in particular sheep and goat (Wright, 2016, 149). In the case of the Kokel culture, Katylyg-5 is the only extensively investigated settlement site. The site is situated in the mountain taiga zone fortified by ditches and ramparts from the south (Sadykov, 2015, 287–288). Zhelvak 5 shows that seasonal settlements were likely also present in the steppe zone during the Kokel period.

While research on settlement structures in southern Siberia still remains underdeveloped, it is no longer a question of whether or not these settlements existed and where they ought to be found. It is, however, necessary to cover different areas of the Eurasian steppes in a more consistent manner, paying attention to the remains of anthropogenic activity beyond burial architecture. Several hill forts were already discovered and studied in the northern Altai (e.g. Chultukov Log-9, Cheremshanka, Nizhnyi Cheposh-3, Maima-1, Manzherok-3 and others), but little is known about such structures in the Minusinsk Basin. Considering the similar choice of location for many seasonal settlements across archaeologically defined time periods, it seems justified to state that settlement continuity is a phenomenon across much of the Eurasian steppe. Zhelvak 5 shows a continuity of anthropogenic activity from the Bronze Age to the Late Iron Age and beyond. This speaks towards strong environmental constraints in the Uyuk Valley and supports the hypothesis that economic activities as well as mobility patterns remained relatively consistent over the longue durée.

In light of the above discussion, locations occupied by settlements in Tuva's Valley of Kings share many characteristics with those recorded in other mountainous areas inhabited by communities of the Scythian type. These sites are commonly located in naturally defensive places, on southern slopes. They were used during winter months, and regularly revisited after a period of summer migrations. A permanent, all-year-round occupation cannot be ruled out in certain periods, as potentially only part of the population engages in seasonal transhumance.

8. Conclusions

The results of the investigation presented in this paper show that seasonal settlements encompassing material remains from the Early Iron

Age “nomadic period” can be found in Tuva. These seasonal settlements display a long-term continuity of anthropogenic activity. Other areas of southern Siberia and beyond show that habitation sites in similar landscape settings should be expected and are likely a lot more common than previously assumed. The Zhelvak 5 settlement exhibits occupation layers dating from the Bronze Age Okunevo culture to the ethnographic period. Systems of small-scale seasonal migration seem to have been stable and consistent over long periods of time. Ethnographic sources from the region provide additional evidence that these patterns remained similar, possibly from the Bronze Age onwards. Winter camps in Tuva were located in treeless mountains, on the southern slopes, in places with uneven terrain and suitable grazing grounds (Dongak, 1995, 85–93). Among the prehistoric settlements in Tuva, the site of Zhelvak 5 and others like Toora Dash (Semenov, 2018), Hadyngly I (ibidem, 231), Hadyngly II (ibidem, 264), and Khem-Terektig (ibidem, 268), revealed many layers, reflecting longer-term occupation and usage. This seems to be at least partially at odds with the narrative of emerging highly mobile pastoralism during the Early Iron Age and hints at consistent stable local transhumance patterns which were maintained over the *longue durée*. The placement of these seasonal settlements in sheltered positions seems to have been similar across vast stretches of southern Siberia including parts of Mongolia, Kazakhstan and Xinjiang. This is leading to new discoveries and quickly revealing a landscape that was littered with seasonal settlements, suggesting small-scale transhumance patterns throughout a period when supposedly highly nomadic tribes dominated the area.

CRedit authorship contribution statement

Nina A. Zhogova: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Visualization, Writing – original draft. **Łukasz Oleszczak:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Visualization, Writing – original draft, Writing – review & editing. **Krzysztof Michalczewski:** Data curation, Investigation, Resources, Software, Visualization, Writing – original draft. **Igor Piękos:** Data curation, Investigation, Software, Visualization. **Gino Caspari:** Conceptualization, Formal analysis, Funding acquisition, Resources, Software, Visualization, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

All relevant data are contained within the manuscript.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ara.2023.100467>.

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