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THE INHILLDAUGAR PROJECT: RESEARCH QUESTIONS AND APPROACHES TO INVESTIGATING FORTIFICATIONS ON COMMUNICATION ROUTES

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The Daugava River has been one of the most important traffic arteries in the Eastern Baltic region. The establishment of more than 30 hillforts alongside this river reflects the importance of this waterway. Most of these hillforts are understudied. Thus, the bigger picture regarding the hillforts' inhabitation patterns, chronology, environment, and function(s) remain unknown. As such, the INHILLDAUGAR project seeks to systematically analyze the river's landscape on a macro scale by combining palaeoenvironmental, archaeological, and linguistic studies. This article presents the genesis of the INHILLDAUGAR project and preliminary results from the 2022 and 2023 field campaigns.

Overall, nine hillforts were studied by using non-invasive and minimally invasive field techniques (including geomagnetic surveys, drillings, and test pits). Additionally, geological and geomorphological investigations were undertaken in the vicinity of these sites. Samples obtained from the archaeological and geological investigations provided data for further palaeoenvironmental studies and shed light on the chronology of the sites.

Keywords: Daugava GIS, Hillfort Studies, Communication Networks, Water Trade Route, Eastern Baltic

Šiame straipsnyje pristatoma INHILLDAUGAR projekto eiga ir preliminarūs 2022–2023 m. lauko tyrimų rezultatai. Dauguva buvo viena svarbiausių Rytų Baltijos regiono transporto arterijų. Daugiau kaip 30 įkurtų piliakalnių prie šios upės atspindi šio vandens kelio svarbą. Dauguma piliakalnių nepakankamai ištirti, tad lieka nežinomas bendras piliakalnių apgyvenimo modelių, chronologijos, aplinkos ir funkcijos (-ų) vaizdas. Projekte „Tarpdisciplininiai Dauguvos piliakalnių tyrimai: (INHILDAUGAR)" (2022–2025 m.) bendradarbiaujant Vokietijai, Latvijai ir Lenkijai, siekiama sistemingai analizuoti upės kraštovaizdį makromasteliu, derinant paleoaplinkos, archeologinius ir lingvistinius tyrimus.

Taikant neinvazinius ir minimaliai invazinius tyrimų metodus (įskaitant geomagnetinius tyrimus, gręžinius ir bandomuosius šurfus) buvo ištirti devyni piliakalniai. Be to, šalia šių objektų atlikti geologiniai ir geomorfologiniai tyrimai. Archeologinių ir geologinių tyrimų metu paimti mėginiai suteikė duomenų tolesniems paleoaplinkos tyrimams ir atskleidė vietovių chronologiją.

Reikšminiai žodžiai: Dauguvos GIS, piliakalnių tyrimai, ryšių tinklai, vandens prekybos kelias, Rytų Baltijos regionas

INTRODUCTION

Hillforts were established in the Eastern Baltic during the Late Bronze Age, around the 11th century cal BC (Podėnas, 2020), and continued to exist until the 13th century AD. Hillforts were situated near water bodies such as lakes and rivers as they were conducive to transporting resources, trading, and exchanging. In this respect, the Daugava River may be considered one of the most important traffic routes from Scandinavia to Volga and the Kama regions (Vasks, 2015). Intense traffic on this river ensured that locals and travelers interacted frequently and made it a popular residential area, thereby creating the multi-dimensional landscape we know today.

Although the Daugava River shores were carefully investigated from the 1960s to 1980s due to the construction of the hydroelectric power plant cascade (Rīgas, Pļaviņu and Daugavpils[1]), many of these hillforts have either not been studied or were insufficiently studied as they were not in the flooding zone or subject to endangerment (Vasks, 2016). We also lack information regarding the palaeoenvironment of the river, its surroundings, and the overall impact of the hillfort establishment. Hence, we lack a holistic understanding of the Daugava River.

Therefore, in spring 2022, the fortifications[2] along the Latvian territory of the Daugava River Valley became the subject of the research project, "Interdisciplinary Hillfort Studies at the Daugava River: Merging and Decoding Archaeological, Environmental and Linguistic Data (INHILLDAUGAR)."[3] These fortifications cover over 300 km of the river valley and its closest areas, dating from the Late Bronze Age (1100–500 BC) to the Middle Ages (1200–1500 AD). In this article, we present the INHILLDAUGAR project, its main objectives, and some preliminary results of the research campaigns which took place in 2022 and 2023.

Creating an atlas of the fortifications along the Daugava River featuring archaeological, palaeoenvironmental, and linguistic data is a central outcome of the project. Here, we build on a long lasting tradition of cataloging fortifications that goes back to the 19th and 20th centuries. However, nowadays, there are different possibilities and higher demand for investigative efforts in pursuit of such data compilations.

In Latvian territory, the registration and description of hillforts began in the 19th century. One of the most known researchers, August Johann Gottfried Bielenstein (1826–1907), visited Latvian hillforts and conducted archaeological excavations at several sites (Vasks, 2014, 22). He published several works, including *Die Lettischen Burgberge* (Bielenstein, 1899), where he classified hillforts based on their visual characteristics.

Corpus works focus on inventorying and recording the individual monuments on a very general level, rather than a system or landscape. The focal point of these works is the formal description of size, shape, and construction of hillforts. Carl Schuchhardt (1859–1943), one of the most preeminent German practitioners of this methodology, compiled a corpus of all prehistoric

[1] The Daugavpils hydroelectric powerplant was not build due to social pressure. However, archaeological research before its supposed construction was still completed.

[2] In this article various terms for fortified settlements are used. Namely, hillfort, fortification, and stronghold. These words are used somewhat interchangably with some nuanced differences. While capturing these nuances is important to ensuring the accuracy of translated substance – focusing on the said nuances transcends the scope of this article, and as such, will not be addressed herein.

[3] Funded by the DFG and the NCN within the framework of the BeethovenCLASSIC 4 - Polish-German Funding Initiative from 2022–2025.

and early historic fortifications in Lower Saxony (Oppermann, Schuchhardt, 1888–1916).

Schuchhardt drew up detailed plans and conducted sondages across ramparts. Such early systematic recordings of fortifications are still valuable today because they are well-preserved. These formal descriptions were almost always paired with interpretations, and in the case of Schuchhardt, arranged and contextualized within known history. Later, Schuchhardt wrote *Die Burg im Wandel der Weltgeschichte* (Schuchhardt, 1931) based on his extensive and international knowledge of monuments. This title suggests that the fortress remain static, while the world history around it is changing. While this is an oversimplification, it is a good analogy for the development of fortification research in the last two centuries. Previous narratives were firmly anchored in an event driven view of history that was nationalistic and based on the construction of ethnic histories of societies. This corresponded to the zeitgeist, and it was against this background that the fortifications were seen, described, and interpreted.

One of the first catalogs of fortifications in Latvia and Estonia was created by Karl von Löwis of Menar (1855–1930) titled, *Burgenlexikon für Alt-Livland* (Löwis of Menar, 1922). Although the catalog focuses mainly on castles, it also includes information regarding hillforts. Massive work in hillfort registration, measuring, and description was undertaken in the 1920s by Latvian archaeologist, Ernests Brastiņš (1892–1942), and resulted in four fundamental monographs. Namely, catalogs of Latvian hillforts *Latvijas pilskalni* (Brastiņš, 1923, 1926, 1928, and 1930). Although descriptive, it contains detailed information about hillforts, including their condition. Therefore, his work is still used as source material today as many of the said hillforts do not exist anymore. Notably, the majority of hillforts were discovered during those expeditions of hillfort registration. It bears mentioning that some preliminary excavations of hillforts along the Daugava River took place in the 1930s (Ģinters, 1936; Šnore, 1936).

Another hillfort survey took place after WWII, from 1947–1950, when archaeologists Adolfs Stubavs (1913–1986) and Emīlija Brīvkalne (1909–1984) did a survey of every then-known hillfort in Latvia, registering a total of 391 site (Vasks, 2014, 23). Based on this survey as well as his own excavations in hillforts, Stubavs created a new typology of hillforts, based on their macroscopic features (Stubavs, 1974). From the mid-1950s, active rescue excavations took place until the 1980s, mainly in the Lower Daugava region. This was connected to its large flooding zone of two hydroelectric power plants (Rīgas and Pļaviņu), which contained several monuments, including hillforts (Vasks, 2016). Although no catalogues were created during the Soviet occupation period, many monographs about excavation results in hillforts were published such as *Asotskoje gorodišče* (Šnore, 1958), Ķentes pilskalns *un apmetne* (Stubavs, 1976), and *Nocietinātās apmetnes Daugavas lejtecē* (Graudonis, 1989). The loss of sites to submersion (e.g., Ķivutkalns and Mūkukalns hillforts and many other sites) led to extensive mitigating archaeological measures and the thorough recording of these now drowned sites. In the 1960s, highway construction works damaged hillforts such as Vīnakalns, and silica brick factory building damaged hillfort sites such as Ķentes Kalns (Graudonis, 1989, Stubavs, 1976).

Juris Tālivaldis Urtāns undertook intensive archaeological surveys to distinguish new hillforts at several sites and published the results in various monographs in the 1990s (c.f., e.g. Urtāns, 2006, 2009, 2013, 2018). Nowadays, the comprehensive availability of LIDAR data for all of Latvia enables the discovery of further unknown hillforts and similar structures. The search for new hillforts is mainly done by enthusiasts in collaboration with archaeologists, which resulted recently in a new catalogue work *Jaunatklātie pilskalni Latvijā* […] (Urtāns, 2022).

This publication presents descriptions, including measurements, sondages, and digital elevation models of 86 newly discovered hillforts.

The extensive research work of the past 150 years has reached a stage that has created a desideratum that merits further analysis and synthesis of already collated information. Older 19th and 20th century works either attempted to document the ethnic traditions, as was the case in the *Necrolivonica* (Kruse, 1842), or merely mapped research atlases (Hollack, 1903). On a global scale, processual and post-processual schools of thought changed archaeology as a discipline by emancipating archaeology from history, ethnography, and geology, and creating numerous sub-disciplines within the archaeological field. Still, strongholds and fortifications have not lost their appeal as a subject of research. New methods associated with new archaeological epistemologies and approaches can result in significant progress in fortification research.

The envisaged atlas on the fortifications on the Daugava takes this into account and builds on the numerous previous works mentioned above. It aims to compile, evaluate, and supplement the wealth of existing data and make it available to the scientific community. A look at the history of research and the hillfort map of Latvia clearly shows a great potential for research on fortifications, for which the "Atlas" is intended to create a modern and advanced scientific basis in the spirit of the old corpus works.

THE INHILLDAUGAR PROJECT – BACKGROUND, OBJECTIVES, AND APPROACHES

The INHILLDAUGAR project is a collaborative effort involving German, Latvian, and Polish researchers and institutions. The German and Polish principal investigators want to undertake joint studies of fortifications given their success with similar earlier endeavors, whereby they conducted multidisciplinary investigations of fortifications and paleoenvironmental studies in Germany, Poland, and Belarus (Sikora et al., 2019; Brandt, Schneeweiß, 2017). The focus was always on fortifications as certain centers in a distinct settlement landscape, and their palaeoenvironmental integration into the natural surroundings. The connection with the Zentrum für Baltische und Skandinavische Archäologie (ZBSA) and the Cluster of Excellence ROOTS provided an opportunity to expand the regional and institutional framework as well as synergized existing international research structures in the Baltic region.

Primary cooperating partners at the ZBSA have conducted joint research in the Baltic region for many decades, with a focus on the former East Prussian region (von Carnap-Bornheim et al., 2012; Prassolow, Ibsen, 2014; Ibsen et al., 2017; Ibsen, 2018). Within the framework of a large-scale project, an exemplary restoration, processing, extension, and presentation of archival data is being undertaken, which will ultimately reconstruct almost a century of archaeological research and make it available to a modern academic audience.

Among other focal points, both questions and methods for fortification research like "Speed Dating" have been developed here and are applicable to other regions (Ibsen, 2018; see below). The institutional and personnel integration of the new project into the ZBSA promises important synergetic effects (fig. 1), not least because the research interest in fortifications is highly developed in the Baltic countries, but also because the Community for Fortification Research (COMFORT) network emanates from this region.

INHILLDAUGAR is also connected to research on conflict resolution strategies in the past within the Cluster of Excellence ROOTS in Kiel and Schleswig (Schneeweiß, 2022). Fortifications have an ambivalent character regarding the potential for escalating conflicts. While it is widely acknowledged that the construction of defensive works can

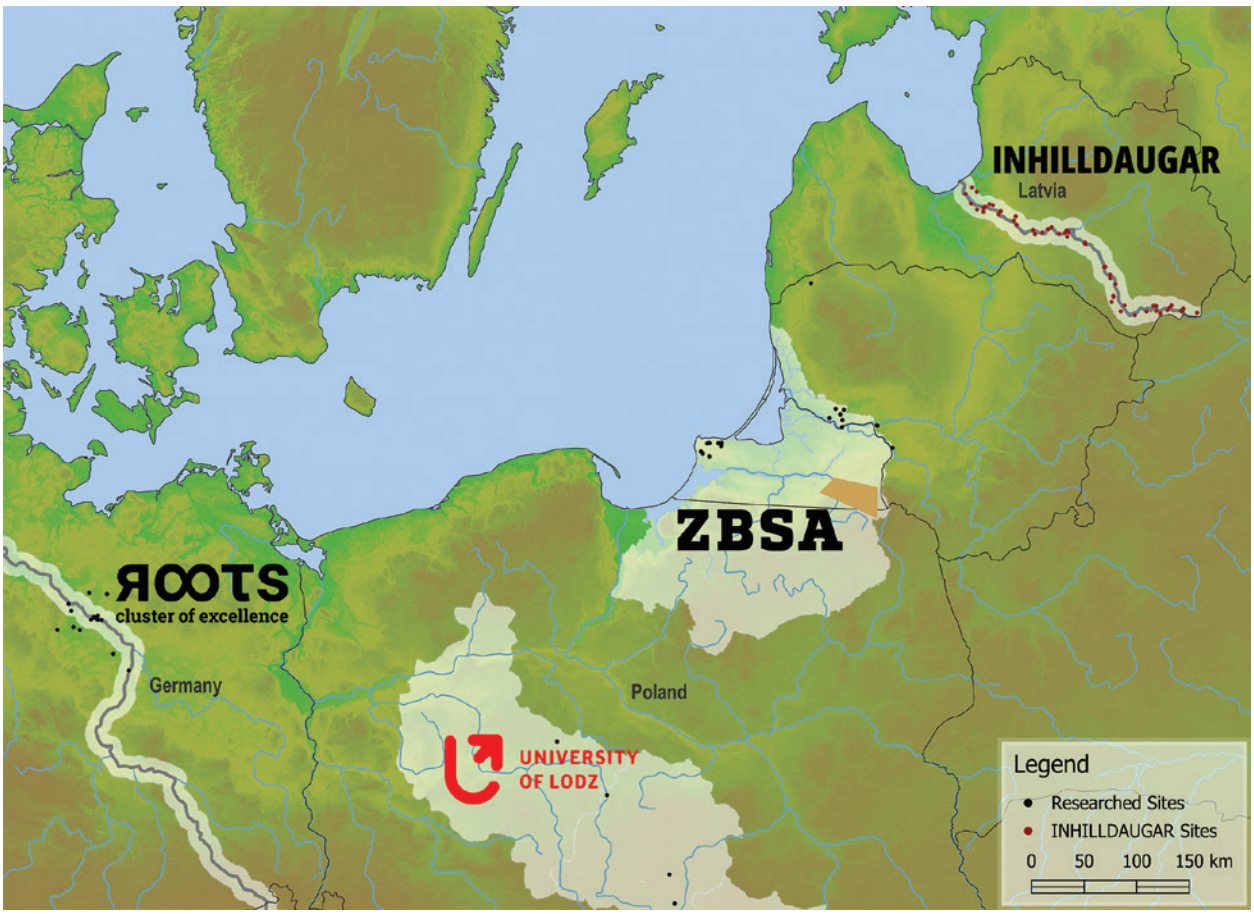

Fig. 1. Some of the working areas of the ZBSA, ROOTS and University of Lodz in the Baltic Sea region in relation to the Daugava river. *Graphics: H. Whitefield.*
1 pav. ZBSA, ROOTS ir Lodzės universiteto komandų tyrimų vietos, susijusios su Dauguva, Baltijos regione. *H. Whitefield brėžinys.*

contribute to the escalation of conflicts, they can also have a stabilizing and de-escalating effect (von Carnap-Bornheim, Schneeweiß, 2020). ROOTS of Conflict investigates conflicts in archaeological contexts with a decidedly interdisciplinary bent that includes archaeological sciences, material sciences, and linguistics. This interdisciplinary approach supports the group's main objective, which is to understand both the spatial dimension and social functions of protection systems related to prehistoric and medieval trade routes.

Hence, the investigation of waterways and the role of fortifications along different riverbanks are essential elements of INHILLDAUGAR. Rivers and river valleys may be understood, above all, as communication arteries, especially in Eastern Europe, where they represent the main gateways for trading flows between Scandinavia and Southern and Southeastern continental Europe. This riverine outlook allows for a special focus on the arterial waterways of the Neman (Memel), Pregel, and Daugava that connected the Eastern Hinterlands to both economic and cultural exchange in the Baltic.

These river valleys are characterized by an extraordinary history of research. A number of sites have been investigated for decades, and in some cases for more than a century. This deep research history and the river that runs through

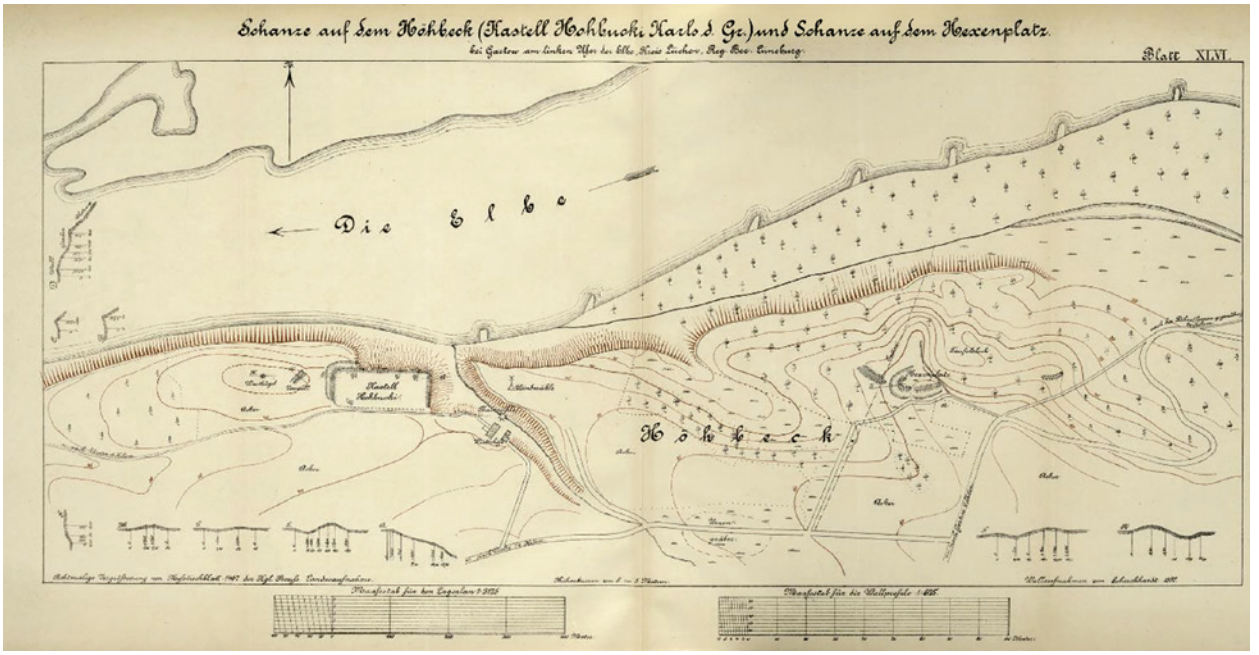

Fig. 2a. Castellum Hohbuoki at the Elbe river. Topographical plan by Carl Schuchhardt 1897. After von Oppermann, Schuchhardt 1888–1916, plate 46.
2a pav. Castellum Hohbuoki prie Elbės. Carlo Schuchhardto topografinis planas, 1897 m. Pagal von Oppermann, Schuchhardt 1888–1916, lent. 46.

it, is ideal for investigating fortifications as a whole system, rather than standalone monuments. In particular, the Daugava River was a main gateway for trading flows between Scandinavia and Southern and Southeastern continental Europe for a long time, connecting very different social, political, and cultural groups. This expansive perspective is also essential for improving our understanding of the social context of fortifications.

Any attempt to create an accurate narrative of the past requires the synthesis of multiple lines of evidence. Approximating historical reality is only possible when we can view fortifications as part of a wider settlement system. Thus, our archaeological perception approaches something similar to that of the contemporary human population. The entire system was naturally present and the fortifications were rarely separated from their social and economic milieu. With this epistemology in place, the study concept was developed to examine and compare fortified landscapes by thoroughly utilizing legacy data, a process taken from previous work on the Elbe River. The following three case studies from outside Latvia provide an insight into the scientific background of the project team and demonstrate how reliable results had been achieved through different approaches.

CONTEXTUALIZING CAROLINGIAN CASTLES: FORTIFICATION AS SYSTEMS

We can demonstrate the importance of revisiting Schuchhardt's early corpus works by employing interdisciplinary methods. In 1897, he examined two hillforts on the Elbe River; one of which was the rectilinear *Vietzer Schanze* (fig. 2a). His excavations yielded little archaeological material and no systematic documentation. Nonetheless, the

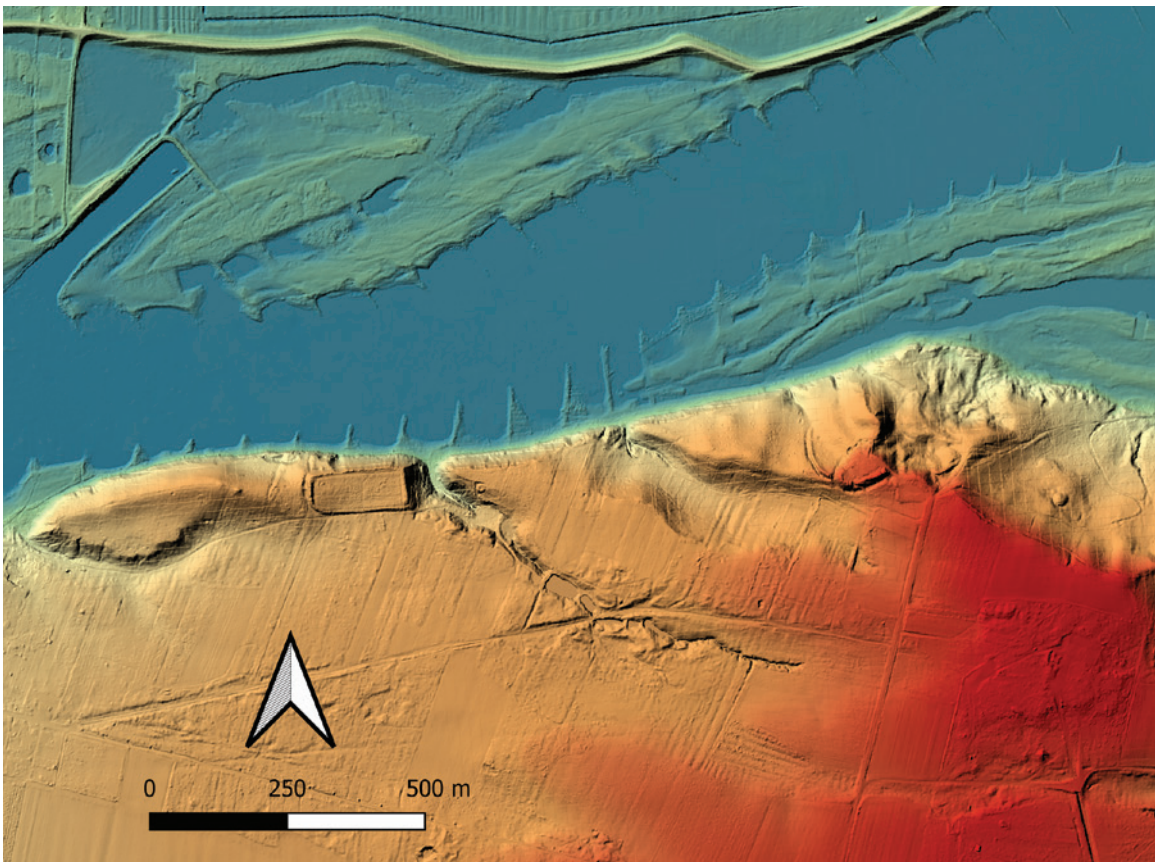

Fig. 2b. Castellum Hohbuoki at the Elbe river. Digital elevation model (1: Schwedenschanze; 2: Vietzer Schanze) based on Geo-Basis-DE/LGB 2014 and Geodata LGLN 2019. After Schneeweiß 2022a, 100, 4b.
2b pav. Castellum Hohbuoki prie Elbės. Skaitmeninis aukščio modelis (1: Schwedenschanze; 2: Vietzer Schanze), paremtas 2014 m. Geo-Basis-DE/LGB ir 2019 m. Geodata LGLN 2019. Pagal Schneeweiß 2022a, 100, 4b.

results affirmed the following hypothesis: the *Vietzer Schanze* fortification had to be Charlemagne's fort, *Castellum Hohbuoki*, mentioned in the Frankish Imperial Annals of 810 and 811 AD (Annales, a. 810; a. 811).

He returned for a second excavation in 1920, but once again failed to deliver the archaeological evidence that was sought. Regardless, he was sure of his findings: the name, shape, and location of the *Vietzer Schanze* site were sufficient for its identification. On this fragile foundation, one may argue that the only surviving fort of Charlemagne in the world could be catalogued.[4] Luckily for him, modern research has vindicated that hunch for the most part.

Schuchhardt's general intuition was correct (Schneeweiß, 2020, 365–369); however, many details were not captured at the time, which left ample room for establishing further nuance (fig. 2b). Namely, addressing questions about how this stronghold

[4] Carl Schuchhardt (1924, 55) wrote about the Vietzer Schanze that it was „das einzige noch wohlerhaltene Kastell nicht bloß in Deutschland sondern in der ganzen Welt, das wir auf Karl den Großen zurückführen können" [the only well-preserved fort, not only in Germany but also in the entire world, that we can trace back to Charlemagne].

functioned, its connection to the river and the communication route, how it was supplied, and how it was garrisoned.

In other words, did the *Vietzer Schanze* function independently or was it part of a system? *Castellum hohbuoki* is not a singular monument on the Höhbeck. In its first mention, it is described as a slighted fortification that can be connected to a hillfort only 800m away from the *Vietzer Schanze* (fig. 2a, 2b). The second reference records that an army of Charlemagne built a new stronghold in 811 AD. This was the *Vietzer Schanze*, which was approximately rectangular but did not endure.

By placing the known monuments in a systematic landscape context, a clearer picture of the Frankish and Slavic communities can be seen (Schneeweiß, 2012; Schneeweiß, 2020, 365–369). *Vietzer Schanze* was part of a Carolingian border fortification system. There was a fortified control post situated at the river crossing directly beneath the Höhbeck in the lowlands, named Schezla in written sources. Beyond its military function it was a central place for locals and traders traveling to neighboring Slavic territories (Schneeweiß, 2010; Schneeweiß, 2020, 370–382).

On the hill, two forts served to monitor the upper course of the Elbe River and to demonstrate power and authority. The garrison of the hillforts at the Höhbeck likely consisted of very few people. The real economic and social activities took place down in the river valley close to the major routeway. The life span of this border control post was less than a generation, as it was rapidly conquered, destroyed and occupied by Slavic people (Schneeweiß, 2020, 382–384). Despite this short history, it is evident that *Vietzer Schanze* can only be fully understood if this fortification is viewed as part of a system within a functional unit situated in its natural context.

This basic sketch demonstrates the information potential contained in a fortification when it is contextualized within a broader landscape. Fortified sites do not exist in a vacuum. They inherently rely on facilities that lie outside the actual fortifications and must be investigated to better comprehend its function(s) and utility. Nonetheless, a point of view that systematically scrutinizes the landscape cannot function without true exploratory work. However, continuing to rely on methods such as Schuchhardt's sondages across ramparts to produce cultural affiliation and chronology does not support this methodology.

SPEED DATING: RAPID RECONSTRUCTION OF HILLFORT CHRONOLOGIES

Establishing chronologies for all settlement components, as was the case with *Vietzer Schanze,* is very important. However, traditional methods of excavation are not always productive, at times inefficient, and expensive. Recent work using motor driven coring for examining ramparts and ditches of hillfort complexes in the Russian Kaliningrad Exclave and Lithuania, demonstrates a method that can help rapidly fill the chronological gaps (Ibsen, 2022) by obtaining datable organic samples for radiocarbon analysis from every element and layer of the fortifications. This "Speed Dating" methodology is highly efficient and minimally invasive, although the corroboration of the extracted evidence takes a high degree of skill and efficient recording. Further, this method allows for the verification and improvement of older excavations.

The hillfort of Apuolė is arguably the most investigated fortified site in Lithuania because it is one of the earliest recorded sites in the country (Zabiela, 2009). Numerous excavations occurred in the pre-war period, mostly concerned with confirming the connection to written sources and the Swedish attack of the site by the Vikings in the 9th century. The excavations from 1928–1932, which included a complete section through the rampart, revealed an incredibly complex stratigraphy with

numerous destruction and construction units from the 1st–11th centuries. (Zabiela, 2009, 144; differing dating: Zabiela, 2012, 23: 4th–13th centuries.). After the reanalysis of the historic records a joint team of Lithuanian and German researchers revisited the site between 2012 and 2014 with the aim of using mechanical drilling to extract stratigraphic cores with datable radiocarbon.

These investigations allowed for the confirmation of the previously assumed dating of the site on the basis of 15 radiocarbon dates from relevant layers of the 9m deep drillings, which proved the reliability of the methodological approach (Ibsen, 2018, 254). While this allows for a degree of nuance and a development of site histories that the excavators of the 19th and early 20th century could never hope to match, there is also another benefit. By repeating this method on various forts, it is now possible to rapidly construct regional scale views on the development of fortification. By systematically applying this method across several sites and summing the data it is now possible to see both the origin and general phases of fortifications (Ibsen, 2022). Beyond showing periods of abandonment and renewal, the broadscale application of mechanical drilling has revealed that the hillforts in the Sambian Peninsula date back to the Bronze Age. By applying the same technique to the hillforts investigated as part of the INHILLDAUGAR project, the presumed Bronze Age origin of many hillforts along the Daugava can be placed on a more secure scientific foundation.

RENEWING HISTORIC HILLFORT RESEARCH

The advance of archaeological techniques in the past half-century provides a unique opportunity for revisiting of excavations and previously identified sites. While it has been demonstrated above that revisiting of historic work on a landscape scale adds important context, the same can also be said for site scale questions. The medieval ring-fort at Rozprza (Central Poland) was excavated by Aldona Chmielowska in 1963–1964 and 1966 (Chmielowska, 1966, 1982).

In 2015–2016 a campaign of hand-auguring and trenching was conducted and the 27m long trench from 1963 was re-opened (Kittel et al., 2018). The project aimed to redocument the preserved part of the stronghold's earthwork with digital tools and analyze the findings using modern methods. The archaeological stratigraphy was reanalyzed after collecting finds and samples for the absolute dating of subsequent phases of the stronghold's development.

A multi-analytical approach using sedimentological, geochemical, archaeobotanical, and archaeopedological research was used to characterize the features of selected archaeological units in detail. The results of research on the ring-fort at Rozprza significantly differed from the results of research on the same site in the 1960s (Sikora et al., 2019). This method has particular value for the INHILLDAUGAR project as the Latvian hillforts were excavated in the pre-war and Soviet periods, the findings of which may be refined by new techniques.

Polish research is also on the forefront of applying geophysical and remote sensing techniques to historic research on fortification (cf. Andrzejewski, Sikora, 2017). This is most clear with the hillforts of Gora Chelmo, Spycimierz, Ostrowite, and Krzczonów (cf. e.g. Sikora et al., 2015; Wroniecki et al., 2017). Ostrowite is perhaps the most striking example, in which a previously known, but lost, fort was rediscovered through aerial photography. By coupling this finding with magnetometry, earth resistance, and geochemical prospection the stronghold was relocated and traces of surrounding settlement were discovered (Sikora et al., 2017). Together with GIS, the aforesaid methods enabled archaeologists to chronologically and spatially reconstruct the development of the

site (Sikora, Wroniecki, 2014). These methods are also essential for developing site-scale narratives of fortifications in the Daugava river basin.

OBJECTIVES OF INVESTIGATING DAUGAVA HILLFORTS

There are roughly 3500[5] hillforts in the Baltic region (Vitkūnas, Zabiela, 2017, 8), about half of which are located in Lithuania, Latvia, and Estonia. In Latvia, there are approximately 400 known strongholds which cannot be explained through any one theory; however, such unusually high density of fortifications demands further investigation. Many of these fortifications, including environs of the Daugava River Valley, remain unexcavated despite their imposing presence on the landscape.

Furthermore, between 30–50 sites are known to exist within the Daugava River's vicinity (cf. fig. 1). This high number seemingly underscores the great importance of the river as a communication route, even if the relationship of individual fortifications to the river is opaque. One of the project's principal aims is to clarify this relationship. It can be assumed with some certainty that fortifications were generally connected with the use and control of the waterway (von Carnap-Bornheim et al., 2008, 163–169). To instigate a systems-based approach, it is necessary to determine which fortifications were maintained contemporarily.

Only a limited number of known sites have been subject to rigorous archaeological investigation. Among such sites are some of the largest fortifications, which were completely or largely excavated (e.g., Daugmale, Jersika, and Kentes kalns).

Nevertheless, little is known about the majority of strongholds. In the Daugava area, a large body of research on material culture, inhabitation, and trade of Iron Age hillforts has recently been assembled for individual sites (Urtāns, 1993; Zemītis, 2004). However, very few works have attempted to understand the relationship between hillforts and their neighbours or trace the development of hillforts through time.

The archaeological, geoscientific, and linguistic data collected as a result of the funding received throughout a three year period within the framework of the INHILLDAUGAR project, together with information on earlier excavations from Latvian archives and previously published information, are being recorded in a Geographical Information System (GIS). They will be processed into an open access atlas of the hillforts along the Daugava River Valley that will serve as a starting point for future research. Research questions that will be addressed focus on the reconstruction of conflict resolution strategies along the Daugava Waterway. Mechanisms of ethnic and social conflicts will be scrutinized to better understand how different fractions competed to exercise dominion over the Daugava Waterway. Recently developed theoretical models of escalation and de-escalation processes can be used and approved (Nakoinz et al., 2020). Furthermore, the role of varying environmental conditions for the settlement development is a central issue to be addressed. This is linked to questions about population supply, networks, subsistence structures and the challenges of human-environment interaction in a dynamic river landscape. No attempt has been made so far to research lexis and onomastics to reconstruct a holistic picture that complements the archaeological data in a systematic way using statistically representative samples and databases. Therefore, the project will also aim to integrate best testing practices from archaeological-linguistic interdisciplinary research.

[5] Vitkūnas, Zabiela, 2017, 8 talk about 3500 hillforts in the whole Baltic region including Belarus, Ukraine, Latvia, Lithuania, Estonia and parts of Russia and Poland.

APPROACHES

As already discussed, INHILLDAUGAR is fundamentally based on combining data from the following three disciplines: archaeology, earth sciences (geography, geomorphology, and geoarchaeology), as well as historical and contact linguistics. Minimally invasive and non-invasive techniques from the first two disciplines such as geomagnetic surveys, drillings and test pits, dendrochronological datings, and radiocarbon will be employed to investigate hillforts. Additionally, linguistic and toponomastic data analysis from the third discipline will help establish a deeper understanding of prehistoric and medieval settlement patterns in the Latvian section of the Daugava River Valley area.

Initially, archaeologists will survey the territory to understand its environmental conditions, analyze potential changes in the course of the river and flooding, discover any adjoining lake basins or oxbows, and unearth any existing resources such as bog iron ore. For a precise evaluation of the stratigraphic situation and to obtain finds and sample material, standard test pits are dug inside and in the vicinity of the strongholds, which are supplemented by coring at some rampart-and-ditch systems. This method was successfully used in the Sambian Peninsula/Kaliningrad region of Russia (Ibsen, 2022) and enables the identification of structures during different construction phases of the defensive earthwork, which may then be compared with the dating of the inside occupation phases.

The basic research idea is to collect and merge existing and new data into a data management system for GIS-based spatial analyses, and to decode and reconstruct a possible system of related synchronously existing fortified sites. As is generally acknowledged, linguistic systems adapt to social structures as well as to the natural and human-made environment in various ways (Pawley, Green, 1973; Seržant, 2020). Therefore, the project will rely on both archaeological research findings and linguistic data from a variety of languages belonging to the Baltic, Slavic, Germanic, and Finnic language groups.[6]

PRELIMINARY FIELDWORK RESULTS OF 2022 AND 2023

Conducting comprehensive research on all the hillforts along the Daugava in three years is an impossible endeavour. As such, the project attempted to prioritize sites by research potential. In 2022, 31 fortified sites were surveyed during a weeklong campaign. An initial classification of the hillforts by their research potential, both from an archaeological and geoarchaeological perspective, was developed. Sites were categorized according to the state of research, accessibility, and current state of conservation.

Such due diligence optimized efficiency levels given that some of the aforesaid sites were destroyed since their initial recording or proved unlikely to have ever hosted human activity. In turn the most promising sites provide a wealth of investigative potential until 2025 (fig. 3).

During the 2022 and 2023 field work seasons nine fortifications have been investigated in several short campaigns: Dzenes kalns, Ļūbasta, Zamečka, Vecračina, Kaupre, Sudrabkalns, Melnais kalns, Indrica and Lielindrica (fig. 3). These sites are along the upper reaches of the Daugava, where it flows through the Latgale and Zemgale highlands, and were selected given the paucity of research on the region. The preliminary results of the field research on these hillforts are presented below. They will be incorporated into the data collection of the overall

[6] The linguistic studies of INHILLDAUGAR are being conducted by Ilja Seržants and Aigars Kalnins (University of Potsdam, Institute for Slavistics) in a separate sub-project, which is currently engaged in data acquisition.

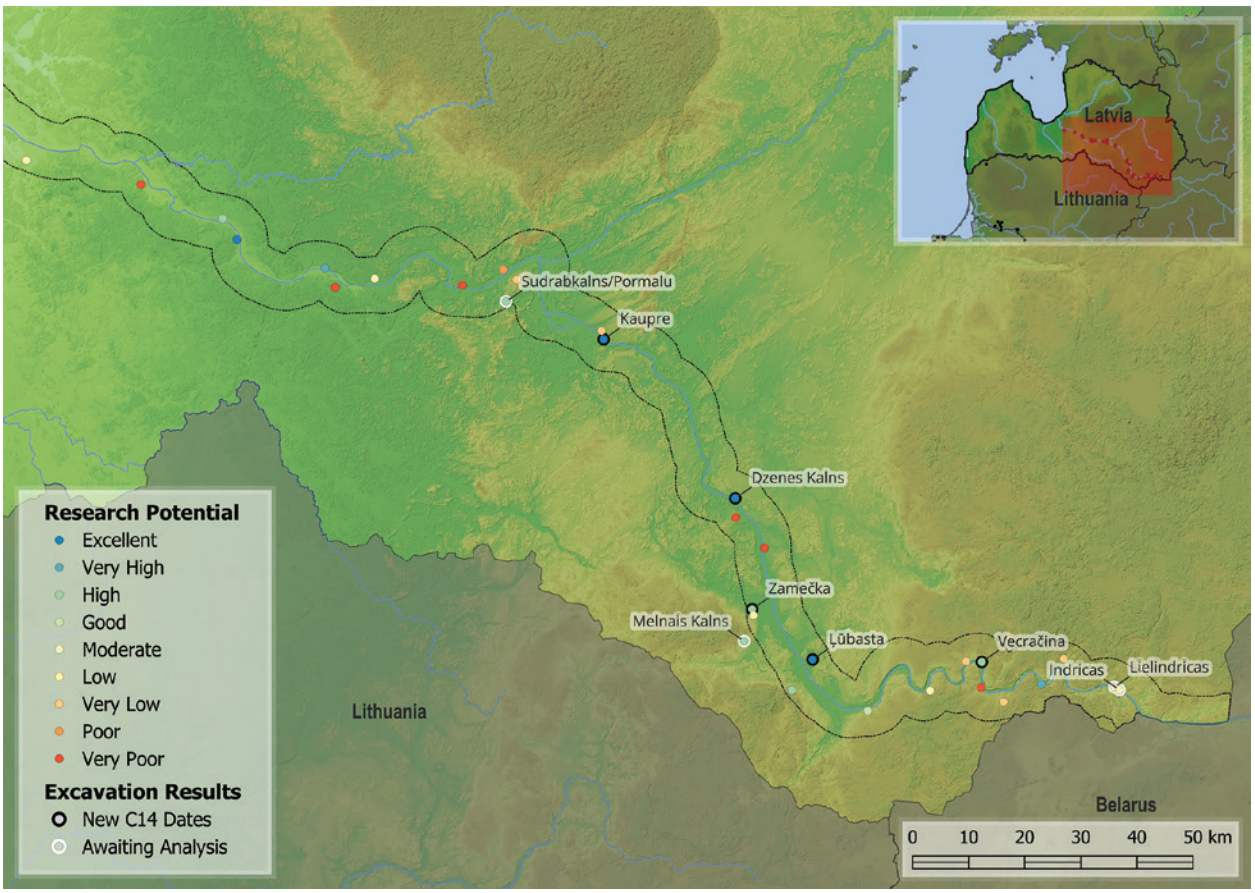

Fig. 3. Map of the Daugava hillforts, categorised according to their research potential for the INHILLDAUGAR project from both archaeological and paleoenvironmental perspectives. The greatest research potential is for sites about which nothing is yet known and which offer good opportunities for field research. Sites that are not accessible or have been extensively studied have a low potential. The sites examined so far are named. *Graphics: H. Whitefield.*
3 pav. Dauguvos piliakalnių žemėlapis, suskirstytas pagal jų tyrimų pobūdį INHILLDAUGAR projektui archeologiniu ir paleoaplinkos požiūriu. Didžiausią tyrimų potencialą turi piliakalniai, apie kuriuos dar nieko nežinoma ir kurie suteikia geras galimybes lauko tyrimams. Mažą potencialą turi vietovės, kurios yra neprieinamos arba jau buvo išsamiai ištirtos. Iki šiol ištirtos vietovės yra įvardytos. *H. Whitefield brėžinys.*

system of Daugava fortifications and are intended to illustrate the empirical dimension of the project.

DZENES KALNS

At Dzenes kalns a total of five test pits revealed an almost continuous archaeological layer of ~20 cm thickness on the plateau which measures about 50 x 30m. This layer was observed in earlier surveys (Brastiņš, 1928). Ceramic finds consisted of pre-wheel thrown pottery, including one sherd with a polished surface, which can only be relatively dated to the Eastern Baltic Iron Age (1st–12th c. AD). The 1m high rampart remnants and exterior ditch were investigated along a profile of 25m with 20 individual boreholes.

The reconstructed rampart cross-section reveals two discrete construction phases. Radiocarbon dates from embedded charcoal place the initial construction phase in the early Iron Age (ca. 1st–2nd c. AD).

The exact chronology of the second phase remains uncertain; however, it may belong to a later Viking Age occupation, as suggested by some radiocarbon date from the ditch fill. Further drillings outside the rampart did not yield any traces of settlement activity, so it was not possible to resolve whether a bailey settlement was present. Additionally, some valuable information for palaeoenvironmental reconstruction was obtained which will facilitate the reconstruction of the adjacent river valley at different periods.

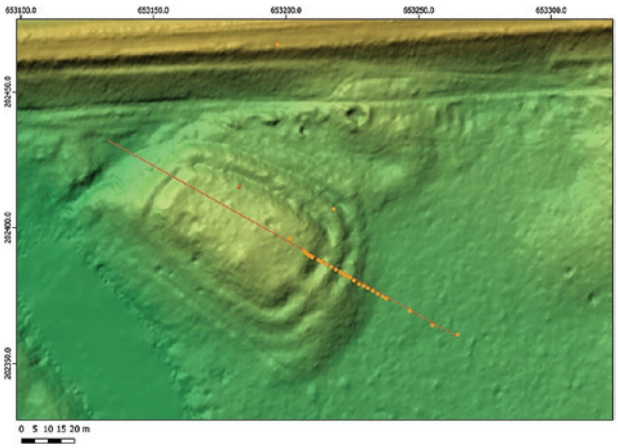

Fig. 4. Digital elevation model of the Ļūbasta stronghold, based on LIDAR data, with the drilling catena through the rampart-and-ditch system. *Graphics: J. Sikora* (DEM base by Gatis Kalnins)
4 pav. LIDAR duomenimis pagrįstas skaitmeninis Lūbastos piliakalnio reljefo modelis, kuriame pavaizduota gręžimo linija per rampų ir griovių sistemą. *J. Sikora brėžinys* (Gatis Kalnins DEM pagrindas).

ĻŪBASTA

Despite being an impressive multi-vallate structure, the hillfort of Ļūbasta was only discovered in 2021 using LIDAR data (Urtāns, 2022). A test pit placed on the plateau revealed no clear archaeological layer, but some sherds of striated (brushed) pottery were recovered. These items provide a loose chronology of occupation in the Eastern Baltic during the Late Bronze Age (1100–500 BC) or Pre-Roman – Early Iron Age (500 BC–400 AD). Radiocarbon datings for charcoal from cores in the rampart suggest an initial construction event in the Late Bronze Age (~11th to 8th c. BC). Some other occupation events may have taken place based on excavated evidence from the Pre-Roman Iron Age and Late Iron Age.

Single radiocarbon datings suggest that the ditch system may have been partially renovated in the Pre-Roman Iron Age (1st c. BC). The rampart-and-ditch system was investigated by a 35m long drilling catena with 22 boreholes, which also drilled into the area surrounding the biogenic plain (fig. 4, fig. 5). A further six-hand augering in direct extension of this line served to reconstruct the palaeoenvironmental conditions of the hillfort, which apparently adjoined a large forested mire area to the east and south. The preliminary results demonstrate that the biogenic plain is formed by at least 4m of lacustrine deposits (mostly gyttjas) underlain by Allerød basal peat and covered with peat and mineral-organic deposits. The transformation from lake to swamp and mire took place circa 1500 BC. However, acute fluctuations of water levels continued, creating a swamp in the stronghold's surrounding area.

Fig. 5. Timo Ibsen conducting of drillings with the motor driven vibracore hammer in Ļūbasta. *Photo: P. Kittel.*
5 pav. Gręžimas variklio varomu vibraciniu plaktuku Ļūbastos piliakalnyje. *P. Kittel nuotrauka.*

ZAMEČKA

The summer 2022 campaign concluded with the investigation of Zamečka. The hillfort is situated on a prominent kame hill and consists of three comparatively massive concentric ramparts up to 3m high, each with an adjacent ditch. Jānis Graudonis (1913–2005) created a test pit in 1968 which revealed a 0.7–1.3m thick archaeological layer; however, no cultural or datable material was recovered apart from some striated and some Iron Age pottery such as rusticated ware (Graudonis, 1969, 38).

The new investigation focused on two test pits on disparate areas of the plateau. In addition, a WWII trench was cleaned and a profile was prepared. This allowed for the documentation of a 19m long profile from the interior of the fort to the slope of the first ditch (fig. 6). The dark archaeological layer showed no clear internal stratification (despite being a massive structure), but contained extensive finds from the Eastern Baltic Late Bronze Age and Pre-Roman Iron Age.

An intensive occupation during the Late Bronze Age was confirmed by a series of radiocarbon dates as well as a number of building features. Furthermore, 38 cores were made along the NNE-SSW oriented profile covering the hillfort plateau, rampart and ditch systems, and the adjacent biogenic plain within a small closed depression. The first results show a complex stratigraphic situation in the southern part of the rampart with possible remains of an older defensive system, confirmed by 14C datings. Ditch fill was up to 1.3m deep. On the plateau the archaeological deposits extend up to 0.8m. The small closed depressions in the immediate landscape of the fort are the remains of small lakes that may have existed since the last glaciation period, or more precisely, since the Late Weichselian. The excavation of Zamečka has revealed a complex occupation history that will require a painstaking and comprehensive analysis.

VECRAČINA

To conclude the 2022 field season, the hillfort of Vecračina was investigated during a short campaign towards the end of October. This stronghold was previously dated to the Late Iron Age based on its general appearance (Berga VIAA, 563, 44). It is situated on a steep 35m long slope of the Daugava River Valley within the Upper Daugava Spillway Valley and was destroyed for the most part.

Only the rampart and ditch system, consisting of two impressive ramparts and a deep ditch in between, is well preserved. These ramparts are bisected by an access road built in 1986. This enabled archaeologists to gain precise insights into the structure of the ramparts and to compare them with a profile drawing made by the archaeologist, Tatjana Berga (1944–2020), during the excavation in 1986 (Berga VIAA, 563). The surviving structure consists of two 3.5m high ramparts and was probably single-phased. Evidence of the use of grass or peat sods as building material for the rampart was remarkable (fig. 7). Roughly 10m west from this rampart cross-section, a series of 23 boreholes were conducted and provided a secondary profile for comparison. The results show a similar construction at both locations and point again to a single phase of construction.

To the north, there is an outer settlement with an archaeological layer several decimetres thick in front of the outer rampart. It is partially preserved under a subrecent plow horizon and confirmed both by drillings and a test pit (the area is forested). The open settlement and rampart contained noteless finds, making radiocarbon dating critical for a precise chronology. The radiocarbon data from the outer settlement suggest that this area was actively used in the 7th–8th centuries AD and the 11th–12th centuries AD. The fortification may have been built at the beginning of this period, or even somewhat earlier at the end of the Baltic Early Iron Age in the 3rd–4th centuries AD.

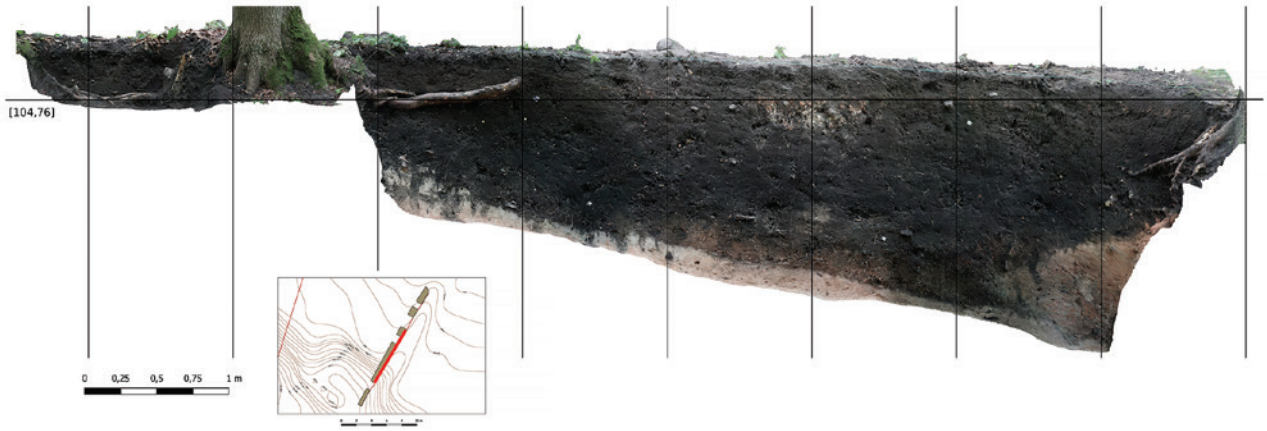

Fig. 6. Zamečka. Main part of the War trench profile with a massive archaeological layer. *Orthophoto/Graphics: J. Sikora.*
6 pav. Zamečka. Pagrindinė karo tranšėjos pjūvio dalis su storu archeologiniu sluoksniu. *J. Sikora ortofotonuotrauka / brėžinys.*

Fig. 7. Vecračina. Western section of the southern rampart with buried soil (podsol) under a rampart construction of sod bricks. The maximum height of the section is 1.80 m. *Photo: J. Schneeweiß.*
7 pav. Vecračina. Vakarinė pietinio pylimo dalis su užkastu dirvožemiu po pylimo konstrukcija iš velėnos luitų. Didžiausias pjūvio aukštis – 1,80 m. *J. Schneeweiß nuotrauka.*

The environmental conditions around the hillfort location were of special interest. Two slightly inclined terraces were documented in the Daugava Valley below the hillfort. The lower one (2.5–4m above the river channel) is formed by alluvial deposits, 14C dated to the Late Bronze Age (ca.750-450 BC), Iron Age, while the upper one (7–11m above the river channel) is built by biogenic deposits that cover alluvial sediments from 4th and 3rd millenium BC. Biogenic deposits (gyttjas and peats) were accumulated mostly in the last millennium. A few spring niches (most of them dry in the present-day) were documented on the valley slope that may have been used in the past as a source of freshwater.

Fig. 8. View from southwest towards the island in the river with Kaupre fortification. The main rampart and the ditch in front of it are clearly visible despite its backfilling and the vegetation cover. *Photo: J. Schneeweiß.*
8 pav. Vaizdas iš pietvakarių į upės salą su Kauprės įtvirtinimais. Pagrindinis pylimas ir priešais jį esantis griovys aiškiai matomi nepaisant jo užpylimo ir augalijos dangos. *J. Schneeweiß nuotrauka.*

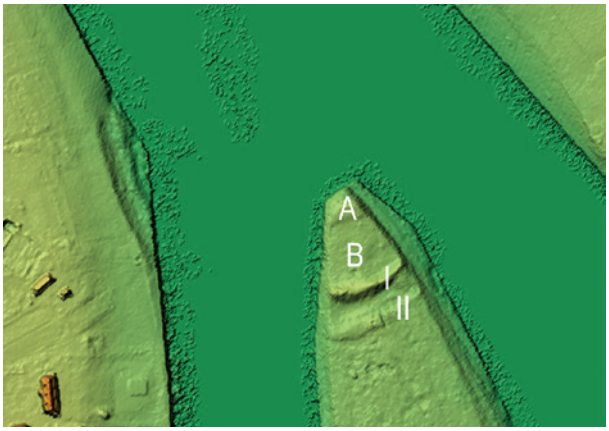

Fig. 9. Digital elevation model of Kaupre, based on LIDAR data, with namings of the different parts of the fortification. *Graphics: J. Schneeweiß* (DEM base by Gatis Kalnins).
9 pav. Skaitmeninis Kauprės aukščio modelis, paremtas LIDAR duomenimis, su skirtingų įtvirtinimų dalių pavadinimais. *J. Schneeweiß brėžinys* (Gatis Kalnins DEM pagrindas).

KAUPRE

Kaupre is an unusual fortification in several respects. Its most unique aspect is its location on an in-channel island in the Daugava River. The Daugava in this area is a multichannel river with in-channel islands that are up to 7–8m high, covered by trees and with solid rocky (Devonian dolomites) cores (fig. 8). Two linear ramparts are located to the south, I and II, thus serving to enclose the northern point of the island where a slight plateau can be seen (A; cf. fig. 9).

An earlier archaeological survey discovered a Late Iron Age burial ground on the island, but it was unclear how such burial ground was related to the fortified settlement (Šnore VIAA: 864, Urtāns, 1988). In May 2023, a test pit on the plateau in the enclosure B revealed a substantial dark archaeological layer (fig. 10). The main rampart I was also investigated with a drilling transect and additional coring was carried out in the enclosure.

After an exceptionally high spring flood, various sherds were uncovered in the bank area, most of which belong to the Iron Age. These chance finds correspond to the material recovered from the archaeological layer in the test pit, although medieval and early modern find material was also discovered there. This island fortification obviously has a rather complex occupation history, for which only a few tentative conclusions may be drawn at present.

An archaeological layer could be detected under the mound-like structure on the northern end of part A of the island, which is probably the same as the archaeological layer in Test Pit 1. This covering sandy structure may be a dune, which was overworked by people and animals. The dark archaeological layer in Test Pit 1 was covered by several sandy and sandy silty layers (a rhythmite of fluvial overbank deposits) that were found only north of the main rampart I (fig. 10).

The dark archaeological layer extends southwards to the main rampart I, but is thinning out. The main

rampart I seems to be erected contemporaneously with the foundation of the occupation layer, which probably mainly accumulated when rampart I was already constructed. This rampart consists of a homogenous fill of sand and stones. There is no evidence of timber shoring or other stabilizing structure. The ditch between ramparts I and II is mostly backfilled with stones and loam (originating from the local dolomite), but not with fluvial sediments.

This setting suggests that the ditch developed after the overbank deposits recorded at the plateau area B. The southernmost rampart II is also difficult to interpret. It is highly unusual as it appears to be a stone construction. The rampart consists of large, mostly erratic, blocks at its base, with smaller stones, mainly dolomite, piled on top (fig. 11). Both the chronology of the rampart and its relation to the archaeological layer are yet to be resolved. It cannot be ruled out that the stone rampart II was built at the same time as the rampart I and the ditch. In 1938, a shooting facility was built that disturbed the center of the rampart II and further complicated any interpretation (Urtāns, 2006, 40). The ongoing analysis will help better understand the development of Kaupre.

Fig. 10. Kaupre stronghold, test pit 1. The stratigraphical section shows the dark archaeological layer overlying a larger feature and covered by several sandy layers. *Photo: J. Schneeweiß.*
10 pav. Kauprės tvirtovė, šurfas nr. 1. Stratigrafiniame pjūvyje matomas tamsus archeologinis sluoksnis ant didesnio darinio ir padengtas keliais smėlio sluoksniais. *J. Schneeweiß nuotrauka.*

Fig. 11. Stone rampart of Kaupre stronghold. Cleaned section at the eastern bank of the island. Photo: *J. Schneeweiß.*
11 pav. Akmeninis Kauprės tvirtovės pylimas. Nuvalyta atkarpa rytiniame salos krante. *J. Schneeweiß nuotrauka.*

SUDRABKALNS

The hillfort of Sudrabkalns is an impressive mound with steep slopes and a small plateau of 0.18 ha on top. There is a plain at its base, which has previously yielded finds used to support the presence of a bailey settlement (Urtāns, 1999). A geomagnetic survey was conducted in May 2023 and some of the identified positive anomalies were drilled to identify archaeological features (fig. 12). Only a small terrace directly at the foot of the hill presented an archaeological layer.

The majority of the geomagnetical anomalies investigated were attributed to large natural erratic blocks in the ground. However, a geothermal mapping of the area by drone revealed structures that could possibly be traced back to building positions, which may be relatively recent. Further comparative evidence is needed to validate this conclusion.

A test pit on top of the mound revealed a 20cm thick occupation layer but yielded few finds. While large fragments of Late Bronze and Pre-Roman Iron Age vessels were found, there was no evidence of any

Fig. 12. Geomagnetic prospection of the potential outer settlement area at the foot of the Sudrabkalns hillfort, whose steep slopes can be seen in the background. *Photo: J. Schneeweiß.*
12 pav. Geomagnetinė galimos Sudrabkalnio piliakalnio, kurio statūs šlaitai matomi fone, papėdės gyvenvietės teritorijos žvalgyba. *J. Schneeweiß nuotrauka.*

fortification structures such as palisades. However, the steep slopes around the plateau were likely intentionally modified. At present, the permanent occupation of Sudrabkalns remains questionable, not least because of the small size of the plateau. Rather, it seems more likely that the plateau was used intermittently over a longer time, possibly as a refuge or gathering place. Ongoing analysis will hopefully provide further information on the precise chronology and function of this site.

MELNAIS KALNS

Melnais Kalns is substantially removed from the Daugava River Valley, almost 7km west of the channel. It is situated on a moraine hill within a tunnel valley rich with organic deposits and above the Dubupīte River, which is a tributary of the Ilūkste River. The hillfort was selected because of the great density of surface finds thereon as well as its visible cultural layer.

The site is currently accessible to visitors in an ecological and environmental context. The hillfort is also popular given its mythological and pagan associations. The diverse use of the hill led to numerous anthropogenic interventions and changes, such as the establishment of several wooden walkways, paths, and the installation of stelae.

In June 2023, two test pits were excavated on the plateau and lower terrace. Unfortunately, these

investigations were largely inconclusive, as they were conducted in profoundly disturbed areas. Nevertheless, older artefacts, such as a small antler artifact from the Late Bronze Age, attest to the very early use of this site. However, hardly any statements may be made at present about the exact function of the hill during this early period.

Heavily disturbed remains of a rampart were examined by drilling which may suggest that the rampart underwent two construction phases. The earlier phase was formed mostly by gray humic silty sands with clay admixtures, single gravels and charcoal, and was covered by brown clay mixed with humic sands. A ditch may also have existed there. Radiocarbon analysis may give us further clues to the chronological development of the fortification.

INDRICA

The excavated site was thoroughly investigated in the 1980s by archaeologist Anna Zariņa (1921–2015) (Zariņa, 1984, 1986). The remains of a 17th century manor were afforded great primacy. Whether there was a possible older fortification is still debatable because any surviving remains were likely destroyed by subsequent activity. Several drillings in the immediate vicinity revealed exclusively disturbed layers; hence, no further test pit investigations were done.

Nonetheless, some unexpected findings at Indricas were discovered by an aerial survey which produced a series of photographs, orthophotomaps, and thermal images of the fields adjoining the western part of the hill. Clearly visible positive cropmarks may be interpreted as the remains of a building complex and a ditch or hollow way, most likely late medieval or modern. This area certainly requires further investigation through the use of geophysical and surface surveys. Excavation with test pits could establish whether these are remains of manorial buildings, an abandoned village, or some other type of features.

LIELINDRICA

The end of the summer 2023 campaign at Lielindrica fortuitously yielded many results. This fortification located in the forest was only recently discovered (Urtāns, 2022). It is situated on a promontory of roughly 20m of the glaciofluvial plain. To the east, it is bound by a narrow tunnel valley; and to the west, by a denudational valley and a steep slope descending to the southwest of the Daugava terrace.

Several rampart-ditch features were investigated by 40 drilling transects with the use of Pürckhauer gouge auger. These transects showed that the ramparts were formed from sands mixed with humic sands and with single charcoal admixtures. Areas in the lower part of ramparts featured burned wood and fragments of burned daub. The ditches contained humic sands with charcoal. Two small fragments of potsherds were also found in boreholes – one of them in the bottom of the ditch.

In addition, three test pits were made. The test pit in the interior showed a very thin archaeological layer which contained some smooth pottery, possibly from the Early Iron Age. The other two test pits, situated on the inner parts of the ramparts, yielded only simple artifacts, but revealed valuable stratigraphic information about the structure of the rampart.

The rampart was probably built as a timber-sand construction with two construction phases in rapid succession. The timbers have long since disappeared, but this interpretation is supported by the excavation. Traces of burning prove that the fortification was destroyed by fire which preserved a significant feature in Test Pit 2. Namely, a double layer of charred construction timber, consisting of smaller logs and split planks identified over an area 3m in length (fig. 13). The exact function of this construction is still unclear. It is possible that it was a wooden walkway or some kind of foundation. The exceptional timber preservation, although charred, may allow for dendrochronological dating.

Fig. 13. Lielindrica. Cleaning and preparation for sampling the charred timber construction discovered in Test Pit No. 2. *Photo: J. Schneeweiß.*
13 pav. Lielindrica. Bandomajame šurfe nr. 2 aptiktos apanglėjusios medinės konstrukcijos valymas ir paruošimas mėginių ėmimui. *J. Schneeweiß nuotrauka.*

CONCLUSION AND PERSPECTIVES

INHILLDAUGAR is still in the data collection and compilation phase seeking a uniform data structure that enables both spatial and non-primarily spatial analyses as a basic prerequisite for achieving further research objectives. Prominent among those objectives is the linguistic project part which is expected to be especially complex due to the influences and possible relicts of Finno-Ugrian, Scandinavian, Baltic, Slavic, and German languages. This compilation work will continue until 2025, with an increased focus on systematically analysing and presenting the data and results in an openly accessible atlas publication.

The archaeological and geoarchaeological field research has already considerably advanced the state of research for several hillforts. After 18 months of investigation, a substantial amount of chronological revision is possible and bolsters the archaeological narrative with reliable evidence. The results presented are still tentative and limited to individual sites, but comprehensive analysis will contribute to fulfilling the research objectives set out in 2022.

There are strong indications confirming the hypothesis that the roots of Latvian fortifications extend into the Late Bronze Age (e.g., Lang, 2018). These results, as generally witnessed in the Baltic region, indicate that a significant part of the fortifications was already constructed as early as in the Bronze Age or Early Iron Age, rather than in the Middle or Late Iron Age. This early and intensive hillfort horizon requires an explanation, which we hope to analyze more holistically at a future point. However, the limited presence of Late Iron Age or Viking Age occupation horizons is particularly interesting since it contradicts the perception of

Daugava as a main route to the interior of Eastern European territory at the time. This reliably supports similar observations made beforehand. The same trend was identified in the Sambian Peninsula, whereby a comparatively low-level of activity on the fortifications may be attributed to the Viking Age (Ibsen, 2022). Furthermore, considerable differences were observed with regard to the amount of archaeological finds, which do not seem to correlate with the complexity of the fortification construction. While some sites had a thick dark occupation layer with numerous finds, which indicates lengthy and intensive use, other hillforts showed hardly any utilization horizon despite their complex defensive structures. This indicates fundamental differences in the function of individual sites. In combination with the results of the linguistic research and the paleoenvironmental and spatial analyses, new far-reaching findings may be expected here as well. The implication of these general findings provides fertile ground for discussion as the project continues into 2024 and 2025.

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INHILDAUGAR PROJEKTAS: KLAUSIMAI IR METODAI, TYRINĖJANT ĮTVIRTINIMUS PRIE KOMUNIKACIJOS KELIŲ

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Santrauka

Šiame INHILLDAUGAR projekto straipsnyje daugiausia dėmesio skiriama Dauguvos (Latvija) fortifikacijų kraštovaizdžiui, kur piliakalniai pradėti registruoti, matuoti ir aprašyti dar XIX amžiuje. Prieš Antrąjį pasaulinį karą trys mokslininkai: Augustas Johannas Gottfriedas Bielensteinas (1826–1907), Löwis iš Menaro (Löwis of Menar, 1855–1930) ir Ernests'as Brastiņš'is (1892–1942) atliko archeologinius registruotų paminklų tyrimus ir nedidelės apimties kasinėjimus, kurių rezultatas – skirtingo išsamumo pilių ir piliakalnių katalogai. Kitą reikšmingą piliakalnių tyrimą po Antrojo pasaulinio karo, 1947–1950 m., atliko archeologai Adolfs'as Stubavs'is (1913–1986) ir Emīlija Brīvkalne (1909–1984): Latvijoje iš viso užregistravo 391 piliakalnį. XX a. IX dešimtmetyje intensyvių archeologinių tyrimų ėmėsi Juris Tālivaldis Urtāns'is (*1952). Šiuo metu Latvijoje turimi LIDAR duomenys padeda rasti dar daugiau nežinomų piliakalnių kitame lygmenyje.

Latvijoje patikimų įrodymų yra maždaug apie 400 piliakalnių, ypač susitelkusių palei 350 km ilgio Dauguvos ruožą. Daugiau kaip 30 piliakalnių, esančių prie jos, liudija šio vandens kelio, kaip Rytų Baltijos regiono susisiekimo arterijos, svarbą. Nors daugelis įtvirtinimų buvo preliminariai ir nevienodai ištirti, daugumai jų trūksta naujų tyrimų ir patikimo datavimo. Būtina nustatyti, kurie įtvirtinimai buvo prižiūrimi tuo metu, nes tai būtina sąlyga tolesnei analizei. Be piliakalnių chronologijos, lieka neišspręsti tyrimų klausimai, susiję su jų funkcija, priežiūra, demografija, konfliktų potencialu ir gamtiniu aplinkos kontekstu. Kai kurie iš šių aspektų nagrinėjami INHILLDAUGAR projekte.

Taikant neinvazinius ir minimaliai invazinius metodus (pavyzdžiui, geomagnetinius tyrimus, gręžinius ir šurfus, radiokarboninį ir dendrochronologinį datavimą bei lingvistinius ir toponomastinius tyrimus) siekiama geriau suprasti Dauguvos slėnio ir aplinkinių teritorijų apgyvenimo modelius priešistorėje. Empiriniai duomenys buvo įrašyti į geografinę informacinę sistemą (GIS) ir bus įtraukti į Dauguvos slėnio piliakalnių atlasą. Šitaip INHILLDAUGAR ketina prisidėti prie ilgalaikio vieno svarbiausių šalies kultūrinių kraštovaizdžių tyrimo.

Per pirmuosius dvejus projekto metus (2022–2023) buvo atliekami lauko tyrimai, daugiausia dėmesio skiriant Aukštutinės Dauguvos regionui Latgaloje ir Žiemgalos aukštumoms. Per kelias trumpas ekspedicijas buvo ištirti devyni piliakalniai, kuriuos visus siejo palyginti prasta ištirtumo būklė.

Šių piliakalnių ir jų apylinkių tyrimai jau davė naudingų rezultatų. Būtent archeologiniai-geoarcheologiniai vertinimai, keramikos radiniai ir kelios C14 datos rodo, kad beveik pusė ištirtų piliakalnių (pvz., Melnais Kalns, Zamečka, Ļūbasta ir Sudrabkalns) buvo įkurti vėlyvajame bronzos amžiuje. Ļūbastos ir Sudrabkalnio piliakalniai tikriausiai buvo apgyvendinti vėlyvajame ikiromėniškajame geležies amžiuje. Kiti duomenys rodo Zamečką piliakalnio datavimą ankstyvuoju geležies amžiumi. Tikėtina, kad šiuo laikotarpiu buvo įkurti dar keturi piliakalniai: Dzenes Kalns, Vecračina,

Kaupre ir Lielindrica. Tačiau viduriniame ir vėlyvajame geležies amžiuose toliau buvo naudojama tik Vecračina.

Be to, yra papildomų įrodymų, kad Dzenes Kalns ir Ļūbasta buvo apgyventi vėlyvajame geležies amžiuje. Melnais ir Dzenes Kalns piliakalniuose aptiktos kelios pylimų statybos aikštelės, suskirstytos į skirtingas dalis. Įtvirtinimų sistemų ir apylinkių gręžiniai, atidengus senas perkasas ir bandomuosius šurfus ir geoarcheologiniai tyrimai rekonstravo vietos kraštovaizdžio raidą bei paaiškino topografinius ypatumus. Upės vagos raidos rekonstrukcija, daugiausia dėmesio skiriant vandens kelio naudingumui netoliese esantiems piliakalniams, yra tolesnių paleoaplinkos tyrimų objektas. Sudrabkalnio piliakalnio gyvenvietėje buvo atlikti geofiziniai tyrimai ir sudarytas terminis žemėlapis. *Ad hoc* iš gręžinių įvertinus kai kurias perspektyvias radimvietes, reikšmingų archeologinių duomenų neaptikta. Visų šių rezultatų suderinimas su toponomastiniais ir lingvistiniais stebėjimais yra dar viena tęstinė INHILLDAUGAR projekto užduotis. Archeologiniai ir geoarcheologiniai lauko tyrimai jau gerokai praplėtė žinias apie kai kuriuos piliakalnius. Tačiau projekte INHILLDAUGAR duomenys tebekaupiami, vis daugiau dėmesio skiriant sisteminei duomenų analizei ir pateikimui atvirai prieinamame atlasiniame leidinyje, tapsiančiame pradiniu būsimųjų tyrimų tašku ir suteiksiančiame galimybę atsakyti į įvairius aktualius tyrimų klausimus.

THE INHILLDAUGAR PROJECT: RESEARCH QUESTIONS AND APPROACHES TO INVESTIGATING FORTIFICATIONS ON COMMUNICATION ROUTES

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Summary

This paper focuses on the fortification landscape along the Daugava River in Latvia, where registration, measurement, and description of hillforts began as early as in the 19th Century. Archaeological surveys of the registered monuments were subjected to small-scale excavations by several researchers such as August Johann Gottfried Bielenstein (1826–1907), Löwis of Menar (1855–1930), or Ernests Brastiņš (1892–1942) before WWII, resulting in catalogs for castles and hillforts with different depths of information. Another significant hillfort survey took place after WWII, from 1947–1950, by archaeologists Adolfs Stubavs (1913–1986) and Emīlija Brīvkalne (1909–1984) who registered overall 391 sites in Latvia. From the 1990s, intensive archaeological surveys were undertaken by Juris Tālivaldis Urtāns (*1952). Nowadays, LIDAR data is available for Latvia, which allows for the discovery of further unknown hillforts on a different level.

At present, there is reliable evidence of approximately 400 hillforts in Latvia, with particular agglomerations, along the 350 km Latvian section of the Daugava River. More than 30 hillforts in close relation to the river attest to the significance of this waterway as a communication artery in the Eastern Baltic region. Although many of these fortifications have been preliminary studied to a different extent, the majority of the said fortifications lack new

research and reliable dating. It is necessary to determine which fortifications were contemporarily maintained as a prerequisite to further analysis. Beside the chronology of the strongholds, research questions concerning function, maintenance, demography, potential for conflict, and natural environmental context remain unsolved. Some of these aspects are dealt with in the recent project, "Interdisciplinary Hillfort Studies at the Daugava River: Merging and Decoding Archaeological, Environmental and Linguistic Data (INHILLDAUGAR)", lasting from 2022 to 2025 and carried out as cooperation between Germany, Latvia and Poland.

With a joint application of non-invasive and minimally invasive techniques (such as geomagnetic surveys, drillings and test pits, as well as radiocarbon and dendrochronological dating on the one hand, and linguistic and toponomastic investigation on the other hand) the project seeks to better understand settlement patterns throughout prehistory in the Latvian section of the Daugava River valley and its surrounding areas. The empirical data was recorded in a Geographical Information System (GIS) and will be incorporated into an atlas of hillforts along the Daugava River valley. In this sense, INHILLDAUGAR intends to contribute to the long-term investigation of one of the country's most important cultural landscapes.

In the first two years of the project (2022–2023), field research was conducted with a focus on the Upper Daugava region in Latgale and Zemgale Highlands. Nine hillforts were investigated during a number of short campaigns that all shared a comparatively poor state of research.

The investigation of these hillforts and their surrounding areas has already yielded useful results. Namely, archaeological-geoarchaeological evaluations, pottery finds, and several C14 dates suggest that almost half of the investigated hillforts (e.g., Melnais Kalns, Zamecka, Lubasta and Sudrabkalns) were established in the Late Bronze Age. Lubasta and Sudrabkalns were seemingly occupied in the late Pre-Roman Iron Age. Further evidence suggests that Zamecka was occupied in the Early Iron Age. Four additional hillforts were likely established in this period: Dzenes Kalns, Vecracina, Kaupre, and Lielindrica. However, only Vecracina continued to be utilized in the Middle and Late Iron Age.

Further, there is additional evidence that Dzenes Kalns and Lubasta were occupied in the Late Iron Age. In Melnais and Dzenes Kalns, several rampart construction phases were found and divided into different parts. The multitude of efforts enabled us to verify existing findings with relatively little effort and minimal destruction of the monument. Drillings on fortification systems and in the surroundings were efficient, reopening of old sections and test pits yielded datable finds, and geoarchaeological investigations reconstructed the local landscape development and explained topographic features. The reconstruction of the river course development, with a focus on the utility of the waterway for nearby hillforts, is the subject of further paleoenvironmental research. Geophysical surveying and thermal mapping was conducted at Sudrabkalns in a prospective baily settlement. Ad hoc evaluation of some promising anomalies by drillings did not reveal significant archaeological evidence. Matching all those results with toponomastic and linguistic observations is another ongoing task of the INHILLDAUGAR project.

Archaeological and geoarchaeological field research has already considerably advanced the state of knowledge about several hillforts. However, the INHILLDAUGAR project is still in the data compilation phase that will continue until 2025, with an increased focus on the systematic analysis and presentation of data in an openly accessible atlas publication, which will serve as a starting point for future research and enable a variety of current research questions to be addressed.