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Pergamon, Türkiye

Pergamon and its Micro-Region

The Activities in the 2023 Campaign

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Istanbul Department of the German Archaeological Institute (DAI)

e-FORSCHUNGSBERICHTE DES DAI 2025 · Faszikel 1



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ABSTRACT

The 2023 field campaign in Pergamon and its micro-region continued the interdisciplinary research on settlement dynamics, resource use, and socio-ecological interactions from the Hellenistic to the Roman Imperial periods. In Pergamon, investigations focused on key urban buildings and constructions, including the Gymnasium baths, a presumed Roman imperial residential complex, and modifications along the Bergama Çayı (Selinus) riverbank. Conservation efforts targeted structures such as the Theatre terrace and the Eastern Baths of the Gymnasium. Beyond Pergamon, the archaeological survey and geoarchaeological work investigated settlement structures, land use patterns, and environmental changes in rural landscapes. New insights were gained into the location of the *polis* Parthenion, fortified sites in its vicinity, and the possible identification of the estate of Asidates, mentioned in Xenophon's Anabasis, near Bölcek. Geophysical prospections at sites such as Bozköy, Zağnos, and Üyücek Tepe provided further evidence of rural settlement. Geoarchaeological investigations have reconstructed sediment dynamics of the Araplı catchment and

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the Bakırçay (Kaikos) plain, which provide insight into human-environment interactions and long-term landscape changes.

KEYWORDS

Pergamon, Micro-region, Hellenistic period, Roman imperial period, Urban archaeology, Cultural heritage conservation, Archaeological survey, Settlement structures, Geoarchaeology, Environmental transformation

ZUSAMMENFASSUNG

Die Feldkampagne 2023 in Pergamon und seiner Mikroregion setzte die interdisziplinäre Erforschung der Siedlungsentwicklung, der Ressourcennutzung und der sozialökologischen Wechselwirkungen von der hellenistischen bis in die römische Kaiserzeit fort. In Pergamon konzentrierten sich die Untersuchungen auf wichtige städtische Bauten und Anlagen, darunter die Bäder im Großen Gymnasium, ein mutmaßlicher Wohnkomplex römischer Zeit und Baumaßnahmen entlang des Flussufers des Bergama Çayı (Selinus). Die baudenkmalpflegerischen Arbeiten konzentrierten sich auf Bauwerke wie die Theaterterrasse und die Ostthermen des Gymnasiums. Außerhalb Pergamons wurden im Rahmen des archäologischen Surveys und der geoarchäologischen Feldarbeiten Siedlungsstrukturen, Landnutzung und Umweltveränderungen im ländlichen Raum untersucht. Neue Erkenntnisse ergaben sich zur Lage der *polis* Parthenion, zu befestigten Anlagen in ihrer Umgebung und zur möglichen Identifizierung des Landgutes des Asidates, das in der Anabasis von Xenophon erwähnt wird, bei Bölcek. Geophysikalische Prospektionen an Plätzen wie Bozköy, Zağnos und Üyücek Tepe lieferten weitere Erkenntnisse zur ländlichen Besiedlung. Geoarchäologische Untersuchungen rekonstruierten die Sedimentationsdynamik des Araplı-Einzugsgebietes und der Bakırçay (Kaikos)-Ebene, die Aufschluss über die Mensch-Umwelt-Interaktionen und langfristige Landschaftsveränderungen geben.

SCHLAGWÖRTER

Pergamon, Mikroregion, Hellenismus, Römische Kaiserzeit, Urbanarchäologie, Baudenkmalpflege, Archäologischer Survey, Siedlungsstrukturen, Geoarchäologie, Umweltveränderung

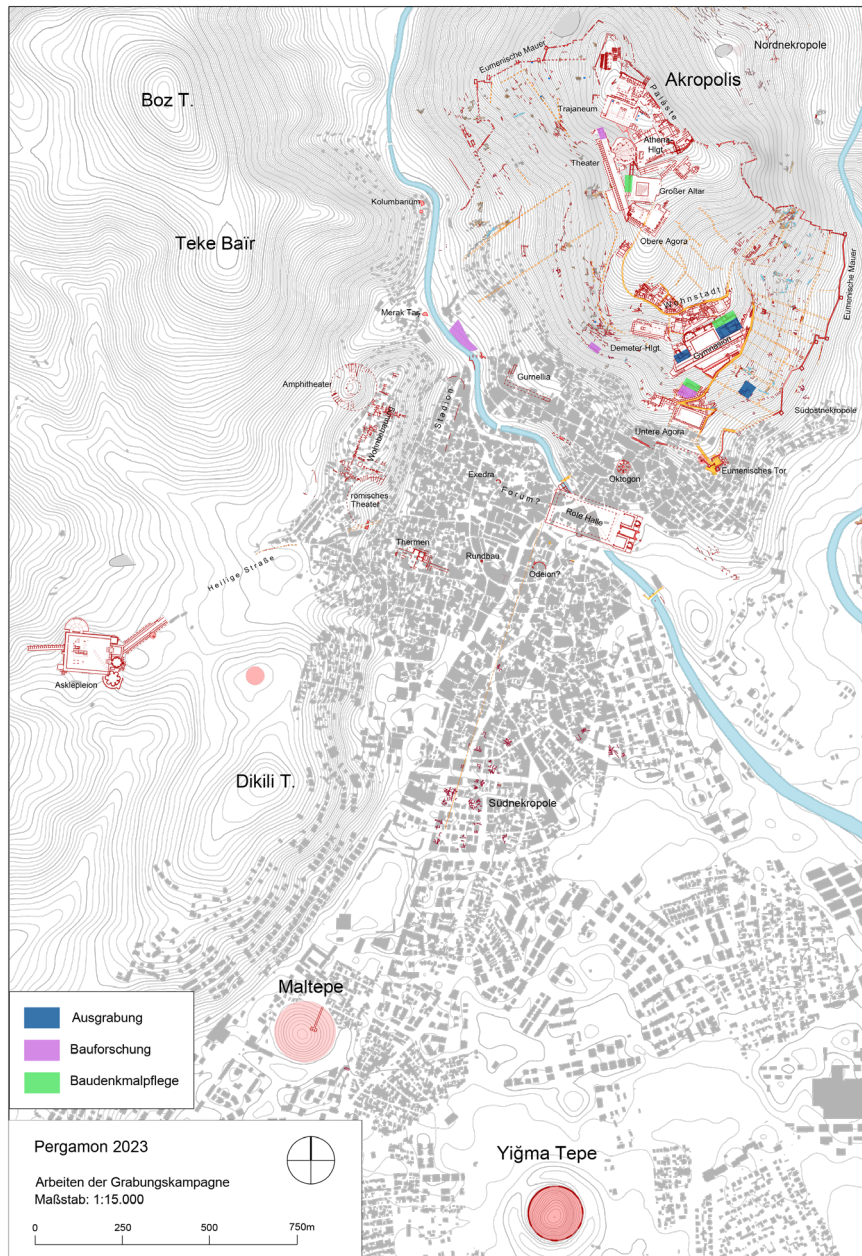


Fig. 1: Pergamon. Areas of activities in 2023

Introduction

1 The archaeological research in [Pergamon](#) in 2023 formed part of a twelve-year project investigating the transformation of the Pergamon Micro-region with a focus on the Hellenistic and Roman Imperial periods¹. At the end of the first funding phase of the project, an international workshop was held in Istanbul in 2022 on the topic of »Micro-regions as spaces of socio-ecological interactions«, the publication of which is now available as open access².

2 The following short report on interdisciplinary archaeological research and cultural heritage preservation in Bergama and its surroundings in 2023 by the Pergamon Excavation of the DAI and its partners is divided into two parts: Part I focuses on building research, prospection, excavation and conservation in the urban area of Pergamon and its immediate surroundings (Fig. 1). Part II deals with the archaeological survey and the geoarchaeological work by a team of physical geographers in the countryside around Pergamon³.

Part I: Pergamon

3 In Pergamon itself, the project is focusing in particular on researching the development of the settlement and city complex and its spatial surroundings,

1 Direction of the project »The Transformation of the Micro-region Pergamon between Hellenism and the Roman Imperial Period« (TransPergMikro) by Felix Pirson (Classical Archaeology; DAI Istanbul) together with Brigitta Schütt (Physical Geography; FU Berlin) and Thekla Schulz-Brize (Building Archaeology; TU Berlin) as well as Güler Ateş (Classical Archaeology; CBU Manisa) and Ulrich Mania (Classical Archaeology; DAI Istanbul). Funded as a long-term project by the Deutsche Forschungsgemeinschaft. The work in Pergamon took place from 22 May to 20 October 2023; the research in the northern environs of Pergamon in the Bergama district, was carried out from 7 August to 20 October 2023. Our special thanks go to the international team of the Pergamon Excavation, especially the deputy excavation directors Güler Ateş and Mete Aksan (Sinop). We would also like to thank the government representatives Mehmet Sevim from the directorate of the Museum of Anatolian Civilizations Ankara and Umut Kızıl from the directorate of the Museum of Muğla, the director of the Bergama Museum Nilgün Ustura and the General Directorate of Cultural Assets and Museums for their support of our work.

2 [Pirson et al. 2024a](#).

3 The short report presented here is based in part on the reports of members of the Pergamon Excavation team. A detailed report on all the activities of the Pergamon excavation in 2023 with contributions from numerous co-authors is published in the second volume of the *Archäologischer Anzeiger* 2024 ([Pirson et al. 2024b](#)). For current information, see also our blog <https://www.dainst.blog/transpergmikro>.



Fig. 2: Pergamon, Great Gymnasium. West Baths

as well as individual buildings from the Roman Imperial period. The most important areas of work are shown in Figure 1. The work in 2023 focused on the baths in the Gymnasium of Pergamon, a presumed Imperial period residential building on the eastern slope of the city hill and the ancient riverbank development of Bergama Çayı (Selinus). Only a selection of the activities in 2023 can be presented below.

4 Two important infrastructure measures that are of great importance for the efficient work of the Pergamon Excavation have to be mentioned, too: The entire electrical installation in the historic excavation house of the Pergamon Excavation and in its depots could be renewed thanks to additional support from the DAI. With the help of two donations from Germany⁴, it was possible to replace the Pergamon Excavation's long-serving forklift truck (built in 1981) with a new four-wheel drive (4 × 4) model. This is a significant support, especially for the preservation of historical monuments. Two summer schools in building archaeology with students from Türkiye and Germany were organised during the working season.

The Baths in the Pergamon Gymnasium and the Development of Bathing in Anatolia

5 The western and eastern baths of the Gymnasium of Pergamon are important testimonies to the development of bathing between the Hellenistic and Roman Imperial periods. This development led to the transformation of the Hellenistic gymnasium of Pergamon into an imperial thermal gymnasium, which took place in two stages: Very likely in early Roman Imperial time, the smaller western baths were built (Fig. 2), and in the Flavian to Hadrianic periods, the larger eastern baths. However, the development of bathing culture in the Pergamon gymnasium can be traced back even further: The establishment of a »loutron« (washroom) on the west side of the Palaestra, where one could not bathe but at least cleanse the body with water, dates back to the 2nd century BC⁵. This makes the Pergamon

4 We are very grateful for donations from »Nachlass Hilde Bühmann« and Rotary Club »Germersheim – Südliche Weinstraße«.

5 Radt 2016, 128–129 fig. 73.



Fig. 3: Pergamon, Great Gymnasium. Western Baths. Trench in the entrance area. Aerial photograph

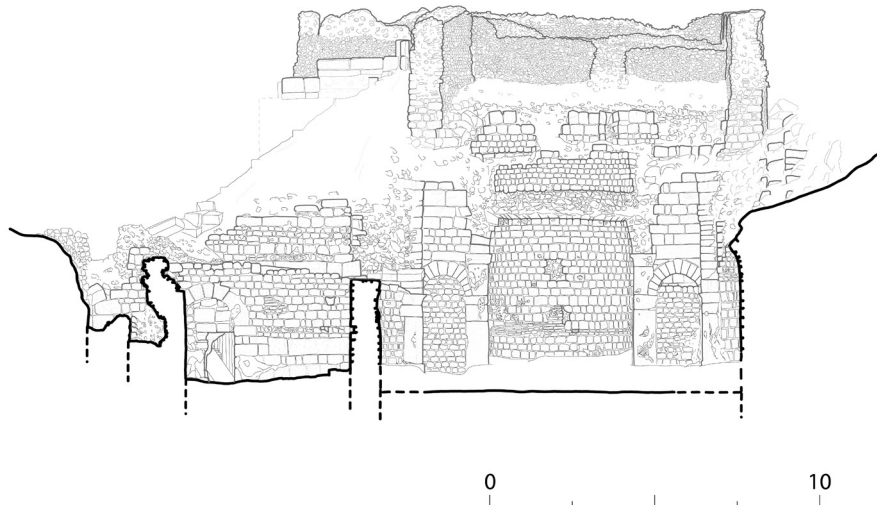


Fig. 4: Pergamon, Great Gymnasium. Western Baths. East-west section; view from the south

Gymnasium an important testimony to the development of bathing culture over four centuries.

6 The dating of the western baths in particular is still very uncertain, but there is also a lack of reliable stratigraphic data for the eastern baths⁶. For this reason, several small-scale sondages were carried out in both complexes (Fig. 3), which had to take into account the large areas of preserved floor coverings. The excavations in the western baths were particularly instructive in this regard, revealing not only the Hellenistic predecessor buildings but also at least two phases from the period when the baths were in use. In addition, finds from the construction period of the baths were also recovered, which we expect to be able to date the Western Baths; the evaluation of these finds is still ongoing. As the Western Baths are regarded as a key monument for the development of Roman baths in Anatolia, these dates could have a significance that goes beyond Pergamon.

7 The detailed building surveys have been completed in both bath buildings, so that floor plans, sections and phase plans are now available, on the basis of which the history of the construction and utilisation of the Imperial period bath gymnasium can be further reconstructed and linked with the results of the trenches (Fig. 4).

The Newly Discovered Riverbank Development of the Selinus

8 In the bank area of the Bergama Çayı – the ancient Selinus – large-scale works to consolidate the banks by the state water engineering authority (Devlet Su İşleri) have brought to light ancient to modern reinforcements as well as the remains of riverbank development in various places (Fig. 5).

9 In co-operation with the Bergama Museum, it was possible to document and examine a particularly well-preserved and revealing area immediately upstream of the remains of the Kazancı bridge from the Roman period⁷. It was possible to differentiate between several types of construction, which can generally be categorised into Hellenistic, Roman Imperial and post-antique phases.

6 The following is partly based on the reports by Hüseyin Çınarlı (Western Baths, MA thesis at Technical University Berlin) and Leá Geissler (Eastern baths, PhD project at Technical University Berlin).

7 The following is partly based on the reports by Yannick Grohmann and Ida Rewicki (MA theses at Technische Universität Berlin).



Fig. 5: Pergamon, Lower city. Bank enforcement at the Selinus (Bergama Çayı)



Fig. 6: Pergamon, Lower city. Bank enforcement at the Selinus (Bergama Çayı). Plan with masonry types

10 The sudden increase in the mass and structural complexity of the building between the Hellenistic and Roman Imperial periods is particularly revealing. In Roman times, not only was the fortification of the shore significantly strengthened, but infrastructure facilities were apparently also built, although the precise function of these is still unclear. This applies to a tower-like construction, which can hardly have fulfilled fortification purposes. One gets the impression that the course of the river and thus the natural environment was interfered with much more massively in Roman times than in previous eras (Fig. 6). This impression is further emphasised by other structures such as the tunnel-like vaults under the Red Hall complex, which also date from the Roman Imperial period and represent massive interventions in the natural course of the river.

11 The relationship between ancient urban development, interventions in the natural environment and the possible consequences for the inhabitants of the Pergamon Micro-region is currently the subject of interdisciplinary research in archaeology, building archaeology and physical geography. There are indications that the submersion of a Hellenistic-Roman farmstead on the Selinus alluvial fan south-east of Bergama in late antiquity could have been triggered by natural disasters such as heavy rainfall and flooding. Such events are still a problem in the area around Bergama Çayı today, as was demonstrated again in January of 2024. Even in ancient times, the sealing of areas during the expansion of Pergamon, together with the progressive reinforcement of the river banks in the city area and the routing of the river in tunnels, may have contributed to an increase in water volumes and their flow velocities, which increased the potential danger of flooding. A meta-study on the historical development of sediment deposition in the Bakır Çay plain has now shown that a first peak of geomorphodynamics was reached in the Roman Imperial period⁸. Such observations of man-made environmental problems in antiquity make it clear that today's environmental crisis is not a sudden event, but rather fundamentally anchored in our civilisation.

8 Becker et al. 2020, 338, 1–29.



Fig. 7: Pergamon, Building AE (terrace house?)

Building AE: A Roman Imperial Terrace House on the City Hill of Pergamon?

12 Research into the urban transformation of Pergamon between the Hellenistic and Roman Imperial periods is also linked to the question of the development of the city hill as a settlement area as a result of the expansion of the lower city from the late 1st century AD. To this end, excavations were carried out in a long-known ruin on the southeastern slope of the city hill to the north-east of the Lower Agora with the aim of clarifying the function and dating of the complex.

13 Due to the identification of a hypocaust complex during the survey in 2007, we initially assumed that the ruin would indicate another public bath complex. However, the discovery of numerous mosaic fragments in the debris of the storeys above the substructures suggested a different interpretation: according to the current state of research, the complex is most likely to be an elaborately furnished terrace house, in whose substructures a bathing facility was installed, which was used by the residents (Fig. 7). In addition to the apparently cruciform heated room, a room with a niche (apodyterium?) and a room with a water basin (frigidarium?), which was originally lined with marble, can provisionally be attributed to the bath complex. Comparable structures were built in the 2nd century AD, for example, in several residential units of terrace house 2 in Ephesus⁹.

14 Geophysical prospection in the area of building AE is planned for 2024, and further excavations based on these results are scheduled for 2025. If the interpretation of the complex as a terrace house is further confirmed, this would be a novelty for the city hill of Pergamon – of which we only know peristyle houses and courtyard houses in traditional terraced construction – and would once again confirm that the city hill would have lost none of its attractiveness as a residential area even in the Roman Imperial period. The closest comparisons for richly furnished terrace houses would be the imperial residences on the Musalla Mezarlıği, which also extended over its steep eastern slope¹⁰.

15 The enduring appeal of the city hill was certainly also due to the location, which offered particularly pleasant climatic conditions on the southern eastern

9 Rathmayer 2016, 664–668.

10 Pirson 2017, 101.

Asklepieion hill: Electromagnetics

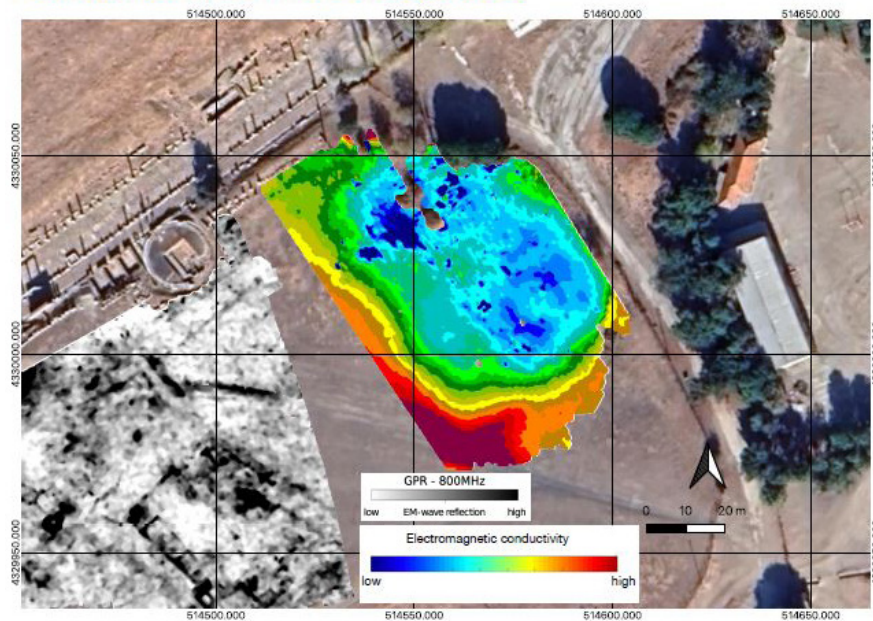


Fig. 8: Pergamon, Geophysical prospections east of the Asclepieion in an area suspected to contain the remains of a bath



Fig. 9: Pergamon, 3D-Model of the Asclepieion with the reconstruction of buildings in its surrounding

slope and also an impressive view of the Bakır Çay plain, where the rural residences of the wealthy city dwellers, such as the Roman villa of Sindel, were located¹¹.

Surroundings of the Asklepieion: Geophysics and 3D Visualisation

16 In the vicinity of the Asklepieion, geophysical investigations using various methods were continued and completed south of the colonnaded street (Fig. 8)¹². In the area of a building structure that can already be recognised in the relief of the surface, clear anomalies can be observed that indicate a larger building – perhaps a bath building – at this location.

17 The results of the measurements from 2019 to 2023 formed the basis for a new 3D visualisation of the Asklepieion and its surroundings as well as the south-western boundary of the Imperial city on the plain (Fig. 9)¹³. With that we have a new basis for discussing the relationship between the suburban pilgrimage sanctuary and the Roman imperial city.

Conservation in the Gymnasion and on the Theatre Terrace

18 The conservation work in Pergamon in 2023 concentrated on the Hellenistic theatre terrace and the Eastern Baths in the Gymnasion, which have already been reported on in connection with the building research. Following preparatory damage mapping, acutely endangered areas were secured there before more extensive conservation measures are to be carried out from 2024 onwards on the basis of the building survey that has now been completed.

19 The retaining walls of the Hellenistic theatre terrace, which have been severely deformed by slope pressure, are being permanently secured in three places in a project planned over several campaigns. Here, too, the first step is the detailed documentation of the building features; due to the dangerous working conditions below the towering ashlar walls in some places, it is essential to reduce the intensity of the documentation on the object itself and digital methods are increasingly being used.

11 Pirson et al. 2022, 350–351.

12 The geophysical prospection was carried out by CAU Kiel under the direction of Wolfgang Rabbel and in cooperation with Kocaeli University (İsmail Kaplanvural).

13 The 3D visualisation was created by Dominik Lengyel (BTU Cottbus) in cooperation with the DAI Pergamon excavation.



Fig. 10: Pergamon, Conservation. Work on the retaining wall of the theatre terrace

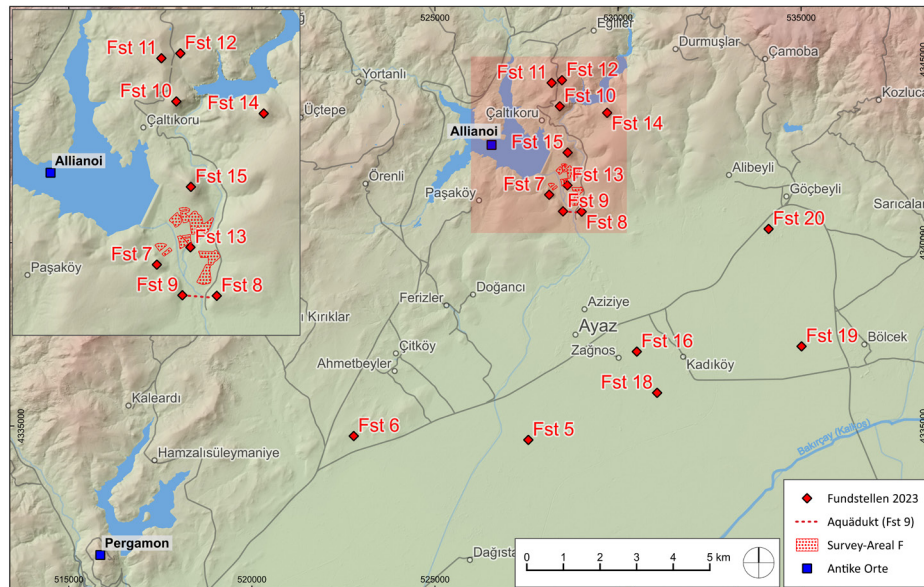


Fig. 11: Pergamon Micro-region. Area north of the eastern lower plain of the Bakırçay (Kaikos) river and the mountainous area near Çaltıköy. Map of the sites »Fundstellen« studied during the 2023 season

20 This applies in particular to the third area, which was the centre of attention this year. Accordingly, care had to be taken when removing and repositioning the ashlar (Fig. 10). In 2024, the work in this third area is also expected to be completed and thus finalised.

Part II: Urban and Rural Areas in the Micro-Region beyond Pergamon

21 The new survey in the districts of Bergama and Kınık, which began in 2022, is scheduled to run for six years. Its main aim is to use the methods of extensive and intensive surveys to investigate settlement structure and land use with a focus on the Hellenistic and the Roman Imperial period, whereby different geographical zones are considered. In view of the dimensions of this area, it goes without saying that it is not possible to cover the entire area, but that only individual selected sub-areas with exemplary informative value can be investigated.

22 The survey is part of the same 12-year project that is applied in the city of Pergamon, investigating the transformation of the Pergamon Micro-region with a focus on the Hellenistic and Roman Imperial periods. The aim is to reconstruct the interaction between people and their natural environment and its representation in a socio-ecological model¹⁴. Within this framework, resource utilisation, production and consumption, lifestyle and health of the inhabitants, architecture and construction, as well as the design and perception of living spaces will be investigated.

23 The work in 2023 focused on the northern part of the eastern lower plain of the Bakırçay (Kaikos) and on the foothills of the mountainous area near Çaltıköy (Fig. 11). Furthermore, the intensive pottery survey at Bozköy in the western lower plain and the geophysical prospections in the vicinity of Hamzalı Süleymaniye-Karadut and Zeytinadağ-Sazlık were completed. A total of twenty archaeological sites were investigated as part of this project. The geoarchaeological fieldwork was

14 Pirson et al. 2024a, 5–6 fig. 6.



Fig. 12: Pergamon Micro-region. View of the modern agricultural landscape in the lower eastern plain of the Bakırçay river



Fig. 13: Pergamon Micro-region. View of Hisarlık Tepe

continued east of Bergama with two transects at Araplı and Zağnos. Only a part of these activities can be presented below.

Modern Landscape Transformation as a Challenge for the Archaeological Survey

24 The lower Bakırçay plain with Bergama-Pergamon at its centre is now an intensively cultivated agricultural landscape (Fig. 12). The original character of a floodplain with meandering watercourses, which we have repeatedly been able to demonstrate in our geoarchaeological investigations, has been almost completely lost. However, the degree of remodelling of the original Holocene landscape varies greatly between different areas of the plain. For example, the study area of the 2023 archaeological survey has only recently been profoundly altered since the 1990s with the construction of the Yortanlı Dam and the neighbouring Çaltıkoru Dam, which are used to irrigate 70 km² of farmland. The interventions initially affect the foothills of the mountains on the northern edge of the plain, where the dams and their floodplains are located and where a large part of the construction material for the huge infrastructure measures was extracted. However, they also concern the irrigated areas, which were subject to massive land consolidation in addition to the construction of the water supply system. This went so far that older inhabitants of the area can no longer localise the course of historical paths or the position of bridges and other landmarks in the terrain. From an archaeological point of view, it would have been desirable to systematically document the state of the landscape and the traces of human activity before these interventions, as was done at least with parts of the later flooded ancient settlement of Alliano. In view of such unfavourable conditions of preservation in our study area, it is remarkable how much knowledge has still been gained.

Parthenion: Localisation and Surroundings

25 The starting point of our investigations was Hisarlık Tepe, south-east of Çaltıkoru at the confluence of the Ilyas and Yortanlı rivers, directly above the transition from the mountains to the plain (see Fig. 11 »Fundstelle15«. Fig. 13). On the summit plateau is a well-preserved, presumably Hellenistic cistern, the only



Fig. 14: Pergamon Micro-region. View of the Çamlyatak Tepe



Fig. 15: Pergamon Micro-region. Fıgla Tepesi. Plan of the remains of the Hellenistic fortress

significant ancient building remains. Alexander Conze identified Hisarlık Tepe as the site of the *polis* Parthenion, the location of which is recorded in Xenophon's *Anabasis* (Xen. anab. 7, 8, 21). However, it is mainly the remains of a late Byzantine fortress with residential quarters in front of it that have been preserved on the hill. The proportion of Classical and Hellenistic pottery is very low compared to the more recent material. It is therefore more likely to be a military fortress with a cistern than an urban settlement from antiquity.

26 This assumption is also supported by the fact that just 1 km to the north of Hisarlık Tepe on Çamlyatak Tepe – the hilltop and parts of the northern flank of which have been largely destroyed by modern quarrying activities (see Fig. 11 »Fundstelle 10«. Fig. 14) – there was originally a fortified settlement, of which numerous building remains, a paved path and lots of pottery from the Classical to late Hellenistic periods still bear witness. The pottery from the Classical period, in particular, is characterised by its special quality.

27 Another argument in favour of interpreting the site as a *polis* with its own territory is the fact that a necropolis with several tumuli was built just 300 m to the northwest on a ridge. In addition to their function as tombs, the tumuli could also have served as landmarks along a border. It is therefore quite conceivable that Parthenion was strategically located slightly set back on Çamlyatak Tepe, while Hisarlık Tepe served as a fortified outpost towards the Bakırçay plain in antiquity.

28 Another fortress from the Late Classical to Hellenistic period, which we located on Fıgla Tepesi approximately 1.3 km east of Çamlyatak Tepe (see Fig. 11 »Fundstelle 14«. Fig. 15), could also have been part of the observation and defence system of the presumed *polis* Parthenion (Çamlyatak Tepe). Together with the fortress on Hisarlık Tepe, it could have secured access to the city through the valley of the river Ilyas from the plain. In addition to a rectangular ground plan, the dimensions of which are reminiscent of those fortified farms in the surrounding area of Pergamon (»Turmgelöfte«), there are other remains of walls and the stone material of collapsed walls spread over an area of approximately 70 × 25 m across the entire summit plateau.



Fig. 16: Pergamon Micro-region. Aerial view of Üyücek Tepe

The Estate of the Persian Asidates Near Bölcek?

29 The original localisation of Parthenion on the Hisarlık Tepe is based on the well-known passage in Xenophon, *Anabasis* VII 8, 9-23, which deals with the raid by Greek mercenaries on the fortified estate of the wealthy Persian Asidates in 399 BC. This account provides us with important insights into the political, cultural and socio-economic conditions in the Bakırçay plain in pre-Hellenistic times. Wolfgang Radt has linked the find spot of an archaic andesite lion sculpture west of the village of Bölcek (see Fig. 11 »Fundstelle 19«) to the estate of Asidates¹⁵.

30 We re-examined the site where the lion of Bölcek was found: it is a mound that has been almost completely eroded and still has a diameter of around 50 m. The preservation of its sparse remains during land reorganisation in the 1990s is thanks to the discovery of the lion statue and the subsequent protection of the site. The intensive survey revealed a concentration of finds in an area measuring 75 × 65 m directly south of the hill and on its southern slope. The finds range from the 3rd millennium BC to the late Byzantine period; this period of use alone emphasises the outstanding importance of the site compared to other rural settlements. Particularly noteworthy in this context is the exceptional quality of the pottery from the Classical period. It speaks in favour of the particular wealth of the inhabitants of this period, as is also documented for the landowner Asidates. Further investigations into the historical topography of the north-eastern plain of the Bakırçay must show whether the results of our survey can contribute to new localisations of places that have been recorded in the written record.

Üyücek Tepe: Settlement Mound and Roman Imperial Monument

31 Further north-east in the plain lies Üyücek Tepe, which is relatively well preserved thanks to its status as a protected area and was surveyed over an area of just under 5 ha (see Fig. 11 »Fundstelle 20«, Fig. 16). The finds again cover a long period from the Chalcolithic to Late Antiquity; the quantitative focus is on the 2nd millennium BC and the Archaic to Hellenistic periods. Significantly less material has survived for the subsequent epochs. The geomagnetic mapping reveals both the remains of a fortification of the mound and of buildings in the interior;

15 Radt 1996, 83–92 pl. 14–17.



Fig. 17: Pergamon Micro-region. Zağnos. Distribution of finds in the area of the rural settlement

the anomalies still have to be correlated with the differentiated concentration of the find material.

32 Üyemek Tepe is one of the best preserved settlement mounds in the eastern lower level of the Bakırçay. It would be a predestined object for the future exemplary investigation of rural settlement in the *longue durée*, also because it is characterised by particularly numerous and diverse features and finds. These include the remains of a large building structure made of *opus caementitium* with the remains of an outer shell made of roughly hewn stones at the south-western edge of the site. The feature is preserved up to a height of just under 3 m and is approximately 3 × 4 m wide. The design is directly reminiscent of the masonry of the Roman Imperial Kaikos Conduit, which runs a little further north and which will be discussed briefly below. The preliminary interpretation of the building as a funerary monument is supported above all by the georadar evidence of a circular structure with a diameter of ca. 22 m and a thickness of ca. 1 m, in the central area of which the building structure stands. This finding can provisionally be interpreted as a burial building with an enclosing wall or as a tumulus with a solid internal structure and a circular wall (*krepis*), the backfill of which was completely removed.

Zağnos: The Utilisation of Rural Space in Late Antiquity

33 The exemplary presentation of the settlement sites investigated in 2023 ends with a find spot on the north-eastern edge of the village of Zağnos (see Fig. 11 »Fundstelle 16«. Fig. 17). The geophysical prospections on an area of around 2.5 ha have revealed a large building complex or a densely built-up settlement. Their agricultural utilisation is evidenced by the counterweight of a press. A large amount of pottery from the late Roman Imperial period and late antiquity was found on an area of 8 ha; finds from the late Hellenistic period to the middle Roman Imperial period are much less well represented.

New Findings on the Roman Imperial Kaikos Water Line

34 The ancient landscape was, of course, not only characterised by settlements and agricultural use. In the Roman Imperial period, large infrastructure



Fig. 18: Pergamon Micro-region. İlyas Çay aqueduct of the Roman Imperial Kaikos water line. Visualisation of its position and effect in the landscape



Fig. 19: Pergamon Micro-region. Göçbeyli village. Votive monument to Dionysus Kathegemon

buildings were added to supply the cities, which had a lasting effect on the landscape. For the lower eastern plain of the Bakırçay, the Kaikos water line, which served to supply the Roman city extension of Pergamon and was probably built in the early 2nd century AD, should be mentioned first and foremost. With a length of 53 km, five tunnels and 40 aqueducts of different sizes, it is one of the largest construction projects of its kind in the Roman Empire. The aqueduct has been well researched and published¹⁶; however, we were able to identify and document the western end of the largest aqueduct bridging the İlyas River for the first time (see Fig. 11 »Fundstelle 8. 9«).

35 On this basis, it was possible to reconstruct the visual appearance and effect of the huge structure in the landscape (Fig. 18). The aqueduct was 40 m high and stretched over 550 m; this is almost twice the length of the famous Pont du Gard (Nîmes, France). In terms of its dimensions, this was a completely new design intervention in the landscape of the Pergamon Micro-region for the time, marking a further stage in human interaction with the natural environment. The construction work as such, including the extraction of materials, that is primarily stone, lime and sand, must have been similarly impressive.

Inscribed Monuments

36 Three marble monuments with inscriptions, which were found in modern villages and have now been moved to the Bergama Museum, bear witness to different aspects of life in rural areas during the Roman Empire. They comprise a funerary stele, a milestone that gives the distance to Pergamon and an altar dedicated to Dionysus Kathegemon with three images (Fig. 19), including a cista mystica and a bull tied to a tree. The three inscriptions have yet to be deciphered in detail.

Geoarchaeological Fieldwork

37 The geoarchaeological fieldwork was carried out east of Bergama near the villages Araplı and Zağnos (Fig. 20)¹⁷. The focus of the investigation was on

¹⁶ Radt 2016, 153–154.

¹⁷ The fieldwork was realised as cooperation between the departments of Physical Geography from FU Berlin and Ege Üniversitesi İzmir. The following is based on the report by Fabian Becker (FU Berlin).

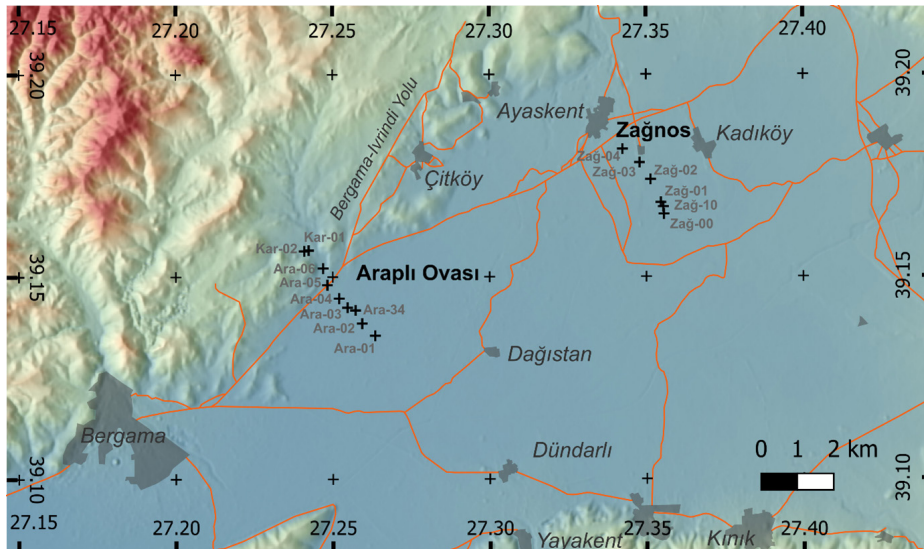


Fig. 20: Pergamon Micro-region. Geoarchaeology and Physical Geography. Map showing the drill sites in 2023

alluvial fans and valleys leading from the north into the Bakırçay plain. The aim of the work was to reconstruct the sediment dynamics on the alluvial fans and the palaeoenvironmental conditions. Only on the basis of this information, it will be possible to convincingly assess the living and economic conditions in rural areas.

38 At the base, the boreholes show the floodplain sediments typical of the Bakırçay plain, which are increasingly overlain by the mostly sandy alluvial fan sediments as the distance to the northern edge of the plain decreases. The higher situated drillings Ara-04 and Ara-05 only show the alluvial fan sediments. In a side valley, only a few centimetres of sediment were drilled before the bedrock was reached.

39 At Zağnos, only floodplain sediments were observed in the deepest borehole, which, together with the location, speaks in favour of an oxbow lake. The subsequent, higher-lying boreholes, Zag-10 and Zag-01, again show floodplain sediments overlain by finer alluvial fan sediments. The prerequisite for the further environmental-historical evaluation of these findings is the ^{14}C dating, which is still pending. In a next step, archaeological and geoarchaeological observations will be interpreted together.

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- Fig. 2: DAI Istanbul, DAI-Pergamon Excavation Archive, Gökhan Günay
- Fig. 3: DAI Istanbul, DAI-Pergamon Excavation Archive, Gökhan Günay
- Fig. 4: DAI Istanbul, DAI-Pergamon Excavation Archive, Hüseyin Çınarlık, Nele Menter
- Fig. 5: DAI Istanbul, DAI-Pergamon Excavation Archive, Gökhan Günay
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- Fig. 9: DAI Istanbul, DAI-Pergamon Excavation Archive, Dominik Lengyel
- Fig. 10: 6
- Fig. 11: DAI Istanbul, DAI-Pergamon Excavation Archive, Bernhard Ludwig
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- Fig. 17: DAI Istanbul, DAI-Pergamon Excavation Archive, Bernhard Ludwig
- Fig. 18: DAI Istanbul, DAI-Pergamon Excavation Archive, Nisanur Dursun, Berslan Korkut
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