**Montenegro's Roman Treasures: Unearthing, Preserving, and Promoting Cultural Heritage**

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**Abstract.** This research initiative delves into the historical riches of Montenegro through the exploration of three remarkable Roman localities: Municipium S in Pljevlja (Northern Montenegro), Doklea Roman town (Central Montenegro), and Mirište in Petrovac along the Adriatic coast. The study is characterized by a multidisciplinary approach, leveraging cutting

edge technology, interdisciplinary collaboration, and community engagement to shed light on Montenegro's Roman heritage.

**Keywords:** archaeological site, cultural heritage, modern technology, preservation, integrated management

**A PROBLEM DEFINITION AND BACKGROUND**

The study discusses the archaeological site of Mirište in Petrovac, Montenegro, dating back to the Roman Empire, and its significance in terms of architectural heritage from that era. The research and excavation efforts at the site aim to understand and preserve these historical structures, even in the face of challenges posed by urban development. Advanced technological equipment such as drones, 3D scanners, and geo-radars have played a crucial role in documenting and surveying cultural heritage at the site. The SWOT analysis within the text highlights various aspects related to this archaeological site. Strengths include its importance to local and national interests, rich cultural and natural heritage, involvement of experienced individuals and organizations, good communication networks, innovative approaches, multidisciplinarity, and the potential for economic benefits through new models and heritage revitalization. However, the analysis also identifies weaknesses such as inadequate preservation and interpretation, limited financial resources, lack of trained personnel, and obstacles in legislation. These weaknesses can hinder effective heritage conservation efforts. Opportunities include the creation of sustainable management plans, forming international research teams, developing tourism products, involving the private sector, and raising awareness through collaborations with civil society and NGOs. These opportunities can contribute to the site's growth and development. Lastly, the threats such as insufficient planning in the surrounding area, lack of cultural diversity in offerings, financial limitations for research, potential destruction and vandalism, and ownership issues are evident. Addressing these threats and capitalizing on opportunities are essential for the sustainable management and development of cultural heritage in Petrovac. The importance of integrating research multidisciplinarity, and responsible decision-making in preserving and revitalizing this valuable cultural asset is highlighted.

By harnessing the power of modern technology, fostering collaboration among experts, and engaging with the community and private sector, we can not only preserve this historical treasure but also breathe new life into it. Mirište stands as a testament to the enduring spirit of human ingenuity, and it is our responsibility to ensure that its legacy continues to inspire and educate generations to come. Together, we can create a sustainable future for our cultural heritage, where the past and present coexist harmoniously, enriching the lives of both residents and visitors alike.

**B RESEARCH METHODOLOGY AND OUR PROGRESS**

Our research endeavours encompass the exploration of three distinct Roman localities within Montenegro: Municipium S in Pljevlja located in the North, Doklea Roman town in the Central part, and Mirište in Petrovac along the Adriatic coast nowadays in Montenegro. As we embark on this comprehensive study, it is essential to outline our research methodology and provide an overview of our progress in the preparatory phase.

**B.1 Methodology**

Site Selection: The initial step involved the careful selection of these three significant Roman localities, each offering unique insights into the history and architectural heritage of Montenegro. *Archaeological Surveys*: We employ archaeological surveys and excavations as the backbone of our research. This includes systematic fieldwork, ground reconnaissance, and the use of specialized equipment to locate and document archaeological remains.

*Technological Advancements*: In he annex of this documents we presented in more details approaches for the locality Mirište, and we will utilize for all the localities the same cutting-edge technology such as drones, 3D scanners, and geo-radars to enhance the precision and efficiency of data collection.

*Interdisciplinary Collaboration*: Our research methodology encourages multidisciplinarity, fostering collaboration with experts in various fields such as archaeology, history, geology, and technology. This approach ensures a comprehensive understanding of the sites.

*Documentary Analysis*: Extensive analysis of historical documents, maps, and records relevant to the selected localities is crucial for contextualizing the archaeological findings.

*Community Engagement*: We emphasize community involvement and engagement with local authorities, ensuring that our research aligns with the interests and needs of the respective communities. ***Our Progress***: At this juncture, our research is in the preparatory phase. Here are some key highlights of our progress:

*Site Reconnaissance*: Our team has conducted initial site reconnaissance visits to each of the three localities. This involved evaluating the accessibility, local infrastructure, and potential challenges that may arise during excavation and research activities.

*Preliminary Data Gathering*: We have begun the collection of preliminary data through literature reviews and document analysis. This phase has provided valuable historical context for each locality. *Stakeholder Engagement*: We have initiated conversations with local stakeholders, including community leaders, government representatives, and academic institutions, to garner support and align our research objectives with their interests.

*Equipment Procurement and Training*: The acquisition of advanced equipment, such as drones and 3D scanners, is underway. Additionally, our team members are undergoing training to ensure proficiency in using these tools effectively.

*Research Planning*: We are in the process of developing detailed research plans for each locality, outlining the specific methodologies, timelines, and milestones to guide our work.

As we move forward, our research will transition from the preparatory phase to active fieldwork, allowing us to delve deeper into the history and heritage of these Roman localities in Montenegro. We are committed to conducting innovative research that contributes significantly to our understanding of these sites and ensures their preservation for future generations.

**C Future works and conclusion**

Our research undertaking in Montenegro's Roman localities of Municipium S, Doklea Roman town in Central part, and Mirište in Petrovac on the Adriatiic Sea and represents a significant endeavour preserve, and promote the rich history of this region. Through the multidisciplinary approach and by applying appropriate methodologies encompassing archaeological surveys, technological advancements, interdisciplinary collaboration, and community engagement, we aim to shed light on the Roman heritage deeply embedded in Montenegro. We acknowledge the challenges ahead, including resource constraints, preservation concerns, and the need for careful planning of the research for these localities' preservation and revitalization.

Our research is not merely an academic pursuit; it is a testament to the enduring legacy of Montenegro's past and an investment in its future. By uncovering the secrets of these Roman sites, we hope to inspire a renewed appreciation for cultural heritage, foster economic growth, and provide a meaningful connection between the past and present for residents and visitors alike. In the coming years, we anticipate a deeper understanding of the Roman presence in Montenegro. Through our collective efforts, we aim to ensure that these invaluable cultural treasures continue to inspire and educate generations to come, reinforcing the importance of responsible stewardship and the enduring relevance of our shared history.

**Contribution to the studies of the ancient villa Mirište - Petrovac, Montenegro**

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**Abstract.** The archaeological site of Mirište in Petrovac, Montenegro, dating back to the Roman Empire, represents a significant example of architectural heritage from the ancient period. It showcases essential characteristics of a "*Vila Rustika*" constructed in the early 2nd century BC. Ongoing research and excavation efforts contribute to the understanding and conservation of these historical structures despite challenges posed by urban development. The utilization of modern technological equipment such as drones, 3D scanners, and geo-radars has significantly facilitated the process, providing accurate and precise data from multiple angles and positions. These advanced tools have revolutionized the documentation and surveying of cultural heritage, enabling a systematic approach and enhancing the understanding and preservation of architectural remains. The SWOT analysis reveals strengths such as its importance to local and national science and multidisciplinary approaches. Weaknesses include inadequate preservation and interpretation, limited financial resources, and insufficient trained personnel. On the other hand, opportunities lie in developing sustainable management plans, forming international research teams, and utilizing the private sector and civil society for heritage conservation. Threats include the lack of planning and development in the vicinity, limited financial resources for further research, and potential destruction and vandalism. The Mirište site and its findings provide valuable insights into Roman rural villas in Montenegro, emphasizing the need for integrated management and the utilization of modern technology to enhance the appreciation of cultural heritage for both residents and visitors.

**Keywords:** archaeological site, cultural heritage, modern technology, preservation, integrated management

**1 Introduction**

The cultural property "rustic villa" - Mirište in Petrovac, originates from the Roman Empire, and contains all the necessary elements of cultural property, representative architectural heritage. The archaeological site of Mirište in Petrovac was deliberately chosen as a case study for the preparation of the seminar paper for several reasons. The architectural remains of this cultural asset represent the architectural heritage of the Ancient period in Montenegro, with all the most important characteristics, on the basis of which this cultural asset can be adequately presented and valorised.

Archaeological research, from 2004 to 2023, encourages the application of research related to the connection of cultural and natural heritage in the cultural landscape.

Fig. 1 and 2. Geographical location of the Mirište 

archaeological site in Petrovac.

(Source: https://earth.google.com/web)

Fig. 3. The location of the Mirište archaeological site in Petrovac. (google)

(Source: https://earth.google.com/web)

Fig. 4. Archaeological site, Mirište - Villa Rustica - Petrovac. (Original photo, 2023).

The United Nations Educational, Scientific and Cultural Organization - UNESCO - is 21.11.1972. year, adopted the "Convention on the Protection of Cultural and Natural Heritage".

The most significant feature of the Convention is that it summarizes the concept of nature protection and preservation of cultural assets in one document: Convention on the Protection of World Cultural and Natural Heritage [1]. Cultural heritage includes monuments: works of architecture, monumental works of sculpture and painting, elements and structures of archaeological character, inscriptions, caves that were used for housing; Group buildings: groups of isolated or connected buildings which, by their architecture, unity or integration into the landscape, represent an exceptional universal value from a historical, artistic or scientific point of view. Natural heritage is understood to mean monuments of nature consisting of physical and biological formations, which are of extremely universal value from an aesthetic and scientific point of view. The World Heritage Convention was amended in 1992, introducing the term cultural landscape. Cultural landscape is cultural assets "combined works of nature and man listed in Article 1 of the Convention [1].

The archaeological site of Mirište - Petrovac was discovered at the beginning of the 20th century. It is believed that this ancient "rustic villa" was built at the beginning of the 2nd century AD, which is most reliably shown by the artefacts found from that time [2].



Fig. 5. Bronze fibula

(source: CKACG, 2016)

**2 Material and methods**

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Fig. 6. Glass fragments (source: CKACG, 2016)

**2.1 Locating the "villa rustica" on the Roman roads through Montenegro.**

In the Roman period, a large number of roads crossed the territory of Montenegro. Their construction was mainly determined by their geographical location. One branch required a path along the Adriatic coast, while the other led inland. On the other hand, there was a need to build roads for the economic exploitation of the Roman province of Dalmatia.

In the Roman era, the main road in today's Montenegro was a road that crossed this territory in the west-east direction as part of the main road from Narona (Vid near Metković) to Shkodra - today's Shkodra. According to research carried out by Sergejevski and A. Evans, one road led from Cavtat (Adriatic Sea), Dubrovnik, to Nikšić. From Nikšić, one branch separated towards Pljevlje (Municipium S), while the other branch merged with the main road towards Shkodër [3].

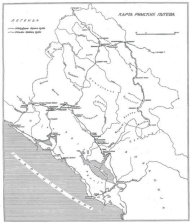
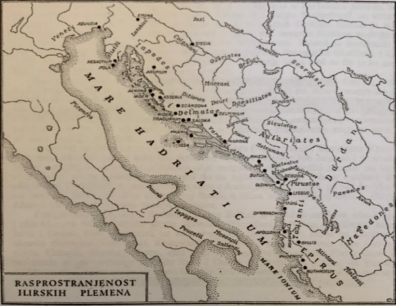


Fig. 7. Map of Roman roads in Montenegro [4]

According to Aleksandar Stipčević, the results of archaeological research and excavation of caves, pits and tumuli led to the origin of the autochthonous theory, according to which the Illyrian culture on the soil of Montenegro was formed on the basis of older Bronze Age and Iron Age cultures in the Balkans. "Confirmation of these researches and conclusions is found in the fact that the shapes of some ceramic vessels can be genetically directly linked to older shapes from the Bronze Age" [4].

Fig. 8. Distribution of Illyrian tribes on the coast of the Adriatic Sea and the hinterland [4]

They often went to war, both with their eastern neighbors the Macedonians, a state that at that time, from the 4th to the 1st century BC, was one of the strongest military powers in the world at that time, led by the great general Alexander the Macedonian, and also in the part of the Adriatic Sea (fig.1), further to Epirus, Greece. Due to different interests, they fought several major wars with the Roman Empire. There has always been a strong motive for dominating the Adriatic Sea, controlling trade routes to the hinterland, expanding its territory, and economic interest prevailed [4].

After the victory of the Roman Empire over the Illyrian king Gentius around 167 BC, the province of Dalmatia was formed in the first years of our era, during the reign of Octavian Augustus. According to some data, the Western Balkans, including Montenegro, were part of the Roman Empire even before that. This is also indicated by the fact that, in addition to Gaul, Caesar was also given Illyricum to govern [3].

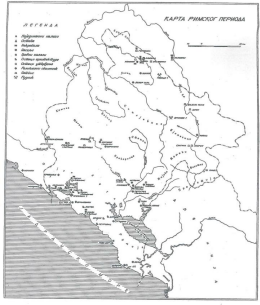
According to D. Živković, our regions were mostly populated by the Roman Empire with loyal people from the provinces, members of the knight class or military veterans. They could also be officials from the ranks of the Roman administrative and financial bureaucracy, that is, meritorious people, who faithfully served the state in any way and on that basis acquired Roman civil law [5].

After the imposition of its administration, the Roman government wants to extend its domination towards the hinterland, by which it builds even better roads that it found from the Adriatic coast towards the hinterland. Their main goal was to form municipiums on the territory of Montenegro, cities from which they would exercise power. Thus, Doclea - Duklja was formed on the territory of the Illyrian tribe of Liburna, and in the north, on the territory of the Illyrian tribe of Pirusti, the Municipality of S near Pljevlja was formed. These municipiums were connected by good communications and represented centers in themselves.

By creating good communications - roads with very high quality and attractive natural features, the Roman government also builds the necessary construction facilities for its needs. In addition to roads and bridges, villas are being built for housing and agricultural purposes, as well as various types of military stations, etc.

Fig. 9. Doclea – Duklja (Source: Original 2023).

Fig. 10. Municipium S – Architectural remains (Source: original 2023).

Fig. 11. Map of the Roman period in Montenegro [4]

Ancient buildings of the rustic villa type on the Roman roads in Montenegro have been insufficiently researched or their research has not even begun. They have been located by archaeological research, but a big problem is their level of preservation. Like for example (Roman station - villa rustica) in the village of Riječani - Nikšić. Village Luke - locality Zidanice - Danilovgrad, Donji Martinići - locality Crkvina Podvrh - Danilovgrad, Ćurilac, Mijokusovići - Danilovgrad, Viš, Orja Luka - Danilovgrad. Zaton - Bijelo Polje. Mirishte - Petrovac.

**3 Characteristics of a rustic villa**

Pliny the Elder divided the villas into two types: the urban villa and the rustic villa.

An urban villa is a type of luxury villa in which mostly wealthier owners live, it is located in the city itself or in its immediate vicinity, while a rustic villa refers to an agricultural farm mostly outside the city in a carefully selected natural environment, which must meet certain parameters for housing. They are mainly inhabited by engaged people who work on the farm, and that is during a certain period of the year, when both agricultural production and their export are the most intensive [6]. An urban villa is a type of luxury residence that is usually located in a city or its immediate surroundings. These villas were popular in ancient Rome, where they were owned by wealthy elites, such as senators, judges and successful businessmen. Urban villas are designed to show off the wealth and status of their owners, and are often built with impressive architectural features, such as courtyards, fountains and gardens.

In his book The Architecture of the Roman Empire: An Introductory Study, William L. Macdonald [7] explained the wider context of Roman architecture in a section on urban villas. The book explores various aspects of urban villas, including their design, layout, and function within the Roman urban landscape, providing insight into the architectural features, decorative elements, and social significance of these villas, offering a comprehensive understanding of their role in Roman society. One of the most famous examples of an urban villa is the Villa Adriana, which was built by the Roman emperor Hadrian in the 2nd century AD in Tivoli, Italy. The villa was designed to reflect Hadrian's love of Greek culture and contained an extensive complex of buildings, including a library, theater and baths [7,8].

Apart from their impressive architectural features, urban villas were also known for their luxurious furniture and decoration. The walls and floors of these villas were often decorated with intricate mosaics and frescoes, while the furniture and utensils were made of the finest materials, such as marble, ivory and gold.

Urban villas were not only used as private residences, but also as places for social gatherings and political events. The owners of these mansions would often organize extravagant parties and banquets, inviting their friends, family and political allies [6].

In the literature on various places Mary Beard was cited and her works "The Roman Triumph" [9], "SPQR: A History of Ancient Rome" [10]; then Paul Zanker and the findings of his research in the work "Roman Art" [11]; and the results of William L. MacDonald's research presented in his works: "The Architecture of the Roman Empire: An Introductory Study" [7]; "Hadrian's Villa and Its Legacy" [8]: we learn that the organization of space in the Villa Urbana, or urban villa, usually consists of several different areas and functional zones. These villas are designed to accommodate various activities and provide a comfortable living environment for the residents. The specific amenities and space layout of Villa Urbana may vary, but generally include the following:

Atrium: A central open courtyard is often located at the entrance to a villa. It serves as a reception desk and provides access to other parts of the house.

Peristyle: An enclosed garden or courtyard surrounded by a colonnaded promenade. The peristyle is a key feature of Roman villas and often serves as a decorative and recreational space.

Reception rooms: These include formal dining rooms (triclinia) and salons (ekedrae), where guests were entertained and social activities took place.

Private apartments: A villa usually has a separate living area for the owner and his family, consisting of bedrooms, private dining rooms, and sometimes private gardens or courtyards.

Service areas: These include kitchens, storerooms, and sometimes slave quarters, where the household staff stayed.

Bathing complex: Many urban villas had their own bathing facilities, such as a balneum or thermae, which could contain hot and cold baths, steam rooms, and exercise areas.

Auxiliary Structures: Depending on the size and complexity of the villa, there may be additional structures such as stables, workshops or gardens for agricultural purposes.

The areas and dimensions of each space within Villa Urbana can vary significantly depending on the design of the specific villa and the wealth of its owner. Although there is no specific range, it is common for villas to span hundreds or even thousands of square meters, with huge yards and large living spaces. The scale and layout of these villas often reflected the social status and aspirations of their owners, displaying the grandeur and opulence associated with Roman urban life. [7-12]



Fig. 12. Villa Urbana, Salona, Croatia (Source: https://earth.google.com/web).



Fig. 13. Villa Urbana Doklea-Duklja. (Source: original 2023)



Fig. 14. Villa Urban Risan, Hypnos. (Source : google.com/web).

Sl.15. Villa Urbana Risan, Floor mosaic. (Source : google.com/web).

Villa Rustica is a type of large agricultural estate, which was common in the Roman Empire, especially during the Late Republic and Early Empire periods. This period spanned from approximately the 1st century BC to the 3rd century AD. During this time, these agricultural estates played a significant role in the Roman economy, producing surplus agricultural goods for sale in the city's markets. The organization and management of the Villa Rustica varied over time and across regions, but the concept of these self-contained agricultural complexes remained prevalent throughout the Roman Empire.

Numerous authors have written about Villa Rustica. Among them, Rubin [13], Ling [14], Zarmakoupi [15], Camardo [16], Launaro [17] point out that Villa Rustica, as a complex, consisted of numerous objects: buildings and surrounding land, forming an independent that agricultural complex. The main building within the villa complex was a residential structure that housed the owner or overseer of the estate. This building often included living quarters, reception areas, and sometimes even luxury facilities. In addition to the residential building, there were storage facilities such as granaries or stables, where harvested crops and agricultural products were stored. These storage areas were key to preserving and managing the surplus that the estate produced. The villa complex also included other structures necessary for the functioning of the agricultural property. This could include workshops for various crafts, such as pottery or metalworking, as well as areas for the production of wine and olive oil. In addition, there may have been areas dedicated to animal husbandry, such as stables or cattle pens. Around the buildings would be cultivated fields, orchards, vineyards and olive groves that made up the villa's agricultural landscape. The land was carefully managed and cultivated to increase productivity, with irrigation systems, terracing and other agricultural techniques.

One of the most famous examples of a rustic villa is the Villa of the Papyri, which was located in Herculaneum, near Pompeii, in Italy [18]. This ancient Roman villa has attracted considerable attention for its extraordinary library and collection of papyrus scrolls. It was called the "Villa of Papyrus" because of the discovery of a large number of papyrus scrolls in its premises. The villa was buried and preserved by the eruption of Mount Vesuvius in AD 79. The villa is believed to have been owned by Lucius Calpurnius Piso Cezoninus, a prominent Roman statesman and father-in-law of Julius Caesar. It was an extravagant residence, with luxurious architectural features and large gardens. The layout of the villa consisted of multiple wings and courtyards, with spacious rooms decorated with exquisite frescoes, statues and intricate mosaic floors.

What makes the Villa of Papyri particularly significant is its library, which contained a vast collection of scrolls, including philosophical works, literary texts and scientific treatises. These scrolls provide a valuable insight into the intellectual and cultural life of ancient Rome. The papyrus scrolls were carbonized due to a volcanic eruption, which resulted in their preservation over the centuries. Excavations at the site revealed part of the villa's library, which depicts the intellectual pursuits of the ancient world.

Research and study of the Villa Papyrus has been carried out by numerous scholars, including renowned archaeologist and art historian Eric M. Moorman. His work The Villa of Papyrus: A Study and Interpretation of an Ancient Roman Villa [18] provides a comprehensive examination of the villa, its architectural features and the importance of its library in the context of Roman culture and science.

Literary sources provide valuable insights into the organization and operation of Villa Rustica. The Roman writer, Pliny the Elder [19], gives a detailed description of the ideal rustic villa in his Natural History (published in AD 77), which includes advice on the best crops to grow and the most efficient way to manage slave labor. The Roman poet Virgil also refers to the villa rustica in his Georgics, (published around 29-27 BC) a didactic poem that extols the virtues of agricultural labour and provides practical advice for farmers.

In addition to literary sources, archaeological evidence shed light on the organization and functioning of the villa rustica. Excavations at the villa rustica sites reveal the layout of the buildings, the types of crops grown and the methods of agricultural production. These discoveries have allowed scientists to develop a nuanced understanding of the economic and social structures that underpinned the Roman Empire, as well as the daily lives of the people who lived and worked on these estates. By studying the physical remains and artifacts found at these sites, researchers gained insight into the division of labour, agricultural practices, and the overall functioning of villa rustica as self-sustaining agricultural complexes [20]. This multidisciplinary approach combining literary and archaeological sources has enriched our knowledge of ancient Roman society and enabled a deeper understanding of the rural economy and the lives of those involved in agricultural production.

Rustic villas in the coastal area were high-quality complexes with luxurious residences, and the centre of rural development and economy.

The existence of the remains of rustic Roman villas on the territory of Montenegro are the starting point for the inclusion, in addition to architectural and conservation research, of other scientific disciplines and their research methods, all for the purpose of obtaining the best and most accurate results that will lead to better conclusions in the research of these constructions buildings (in our case architectural remains).



Fig. 16. Villa Rustica, Istria (Source: https://earth.google.com/web).

Rustic villas are asserting themselves as a new type of rural complex, with the emergence of developed economic characteristics of state land that was given to settlers or military veterans for use. It is mostly built according to the given terrain, very skilfully using the advantages of a certain position. The choice of the site for the construction of the villas was always carefully chosen with a broad vision. In a certain microlocation, they are characterized by the most naturally favourable location (open sea view, proximity to sources of drinking water, greenery, meadows, and a safe port for the simplest transport of agricultural products by sea to the market [21].

Villa rustica are mostly built outside the urban residential complexes of buildings in the centre of the land holding. It is mainly a space that, in addition to the usual way of human habitation, was also a space where animals stayed. The space was also used as a warehouse, i.e. the focus was on agriculture. It means the type of settlement in the countryside on agricultural goods.

Ancient buildings such as rustic villas or urban villas in Montenegro have been insufficiently researched or their research has not even begun. They have been located by archaeological research, but a big problem is their level of preservation. For example (1) Roman post - a rustic villa in the village of Riječani - Nikšić; (2) The village of Luke - locality Zidanica - Danilovgrad; (3) Donji Martinići - locality Crkvina Podvrh - Danilovgrad, (4) Ćurilac, Mijokusovići - Danilovgrad, (5) Viš, Orja Luka - Danilovgrad; (5) Zaton - Bijelo Polje.

**4 Vila Rustica - Mirište in Petrovac**

The archaeological site of Mirište is located in the center of the coastal town of Petrovac, Montenegro, about 70 m as the crow flies from the sea (sea bay), connecting Rizon (Risan), Akruvium (Kotor) and Olcinium (Ulcinj) with one route.



Fig. 17. The area of Mirišta - Petrovac, with the hinterland of the Skadar lake basin

(Source: https://earth.google.com/web)



Fig. 18. Petrovac area

(Source: https://earth.google.com/web)



Fig. 19. Mirište - Antique rustic villa - Petrovac.

(Source: original, 2023).



Fig. 20. Drone shot

(Source: original, 2023).

Archaeological research, since 2006, which has been interrupted several times for certain reasons, continues to this day and new architectural remains are being discovered in addition to the ones already discovered. In the opinion of Montenegrin science and profession, the best-preserved building with all architectural elements in the part of preserved nature. Large-scale urban devastation in the immediate vicinity of the site greatly limited further research and studies.

With the revaluation of the Administration for the Protection of Cultural Property of Montenegro, the so called "identity card" or card of the archaeological site of Mirište in Petrovac was formed.

**Name of the cultural property:**

MIRISTE ARCHAEOLOGICAL SITE

**Location, town, municipality:**

PETROVAC

**Basic data for identification of the locality:**

Decision on placing under protection no. 220/49 of April 8, 1949. years; 01‐1622/1‐61 of 30.10.1961. **Coordinates:**

GPS: 42 12 20 N 18 56 22 E

**Acts on the acquisition of the status of cultural property:**

Locality Mirište, Petrovac.

**Decision on placing under protection no.:**

Decision on placing under protection no. 220/49 of April 8, 1949. years; 01‐1622/1‐61 of 30.10.1961. **Decision on entry into the Register no.:**

Decision on entry into the Register no. 611/1‐48 of 29 July 1948. years; 01‐1622/‐61 of 30.10.1961.; 02-25 from 13.01.1994.

**File number:** File number 25/49; 263/61 Book II, page 123 – 124; registration number 109/94.

At the beginning of the 20th century, the Catholic priest Don Frano Bulić announced that there is a well preserved mosaic at the Mirište site in the olive grove below the Medina karst in Petrovac. On the same site, Niko Gregović, the owner of the estate, discovered a grave with ancient money and a glass vessel. Marko Gregović's son found on the same field, a tombstone that Don F. Bulić handed over to the Split Museum. I. Nikolajevič-Stojković, announced in 1955, that during the First World War, Austrian soldiers destroyed and blew up a mosaic depicting marine animals. A. Jovanović, as a member of the team of the Institute for the Protection of Cultural Monuments of the Republic of Montenegro, conserved the room with the floor mosaic. Apart from the stylistic analysis, he was the first to assume that the room represented a part of a late antique agricultural estate, villa rustica, which he dated to the 4th century AD (Source: Administration for the Protection of Cultural Heritage).

In 2004, the Republic Institute for the Protection of Cultural Monuments from Cetinje began archaeological research at the Mirište site in Petrovac. Research has established that the complex consisted of the main building, which stretched in the N-S direction and a smaller one ten meters away in the west direction.



Fig. 21. Graphic representation of the Mirište location in Petrovac (Source: UZZKD, Elaborate on revaluation, Vila Rustika Mirište-Petrovac, Cetinje, 2014



Fig. 22. Graphic representation of the buffer zone, locality Mirište in Petrovac (Source: UZZKD, Revaluation, Vila Rustika Mirište-Petrovac, Cetinje, 2014

Villa rustica Mirište in Petrovac was built from pressed crushed stone probably exploited in a nearby quarry maidan. The walls have been preserved up to a height of approx. 1 meter and were built using the overlapping technique and mortar was used as a bonding agent.

The closed-type built room (square base fig. 21), with floor mosaic, is oriented in the east-west direction. The mosaic covers an area of 37.5 m2.



Fig. 23. Parts of the architecture of the rustic villa Mirište - Petrovac.

(Source: CKA CG, 2018)

Fig. 24. Mosaic on Mirište in Petrovac (Source: Original, 2023).

An interlaced strip in the form of a rectangular mesh frame creates 12 square fields. Stylized motifs of petals, pelts, cross; sun and crossed loaves are shown in the fields. Fragments of fresco plaster were also found in the immediate vicinity of the mosaic, which leads to the conclusion that the rustic villa was plastered and the plaster painted.

**4.1 Equipment**

Collection of documentation is necessary for a systematic approach and better understanding of all individual components of cultural and natural heritage, cultural landscape [22].

In other words, the preparation and production of quality documentation of architectural heritage is needed for the purpose of defining, interpreting, educating, protecting, conserving, planning, revitalizing and managing heritage. Data collection-materials for creating a database are material remains, available documentation, as well as field documentation.

Classic photo recording (photo camera and technical drawing of the existing state of architectural remains) required a long and exhausting job, which required the engagement of a large number of experts and considerable financial resources. With the aim of improving and modernizing the research of cultural and natural heritage, the cultural landscape, the unmanned aerial vehicle-drone "DJI Phantom 4", Laser 3D scanner "Leica RTC 360, Geo radar Leica DS 2000" is used.

With the use of drones, 3D scanners and geo-radar, it was immediately clear that new technical and technological means greatly facilitate the work and provide incredibly accurate and precise data from multiple angles and from multiple positions.



Figure 25. PHANTOM 4 drone [22]

Fig. 26. Laser 3D scanner, Leica RTC 360 [22]



Fig. 27. Geo-radar Leica DS 2000 [22]

With the use of drones, 3D scanners and geo-radar, it was immediately clear that new technical and technological means greatly facilitate the work and provide incredibly accurate and precise data from multiple angles and from multiple positions.

**4.1 SWOT analysis, potential and valorisation**

SWOT analysis (acronym of English words: Strengths, Weaknesses, Opportunities, Threats) is a reasoning technique that identifies strategic choices by relating strengths and weaknesses to opportunities and threats in the external environment. The four principles of SWOT analysis are placed on the following four pillars: strengths (advantages, strengths), weaknesses (flaws, weaknesses), chances (potential and opportunity for additional development) and risks (threats, dangers).

SWOT analysis can also be used as a means of gathering information from different points of view or the possibility of using the results where threats or weaknesses can be turned into strengths or opportunities. By using SWOT analysis in conservation research, strengths, strengths, chances and weaknesses, and proposals that can make it impossible in some segments of architectural heritage and natural heritage research will be reviewed, and the percentage of utilization of the potential of opportunities can also be assessed or reviewed.

The input data were obtained through individual conclusions, personal views of the candidate's many years of experience working in the field, and with interpretations of the facts of the available literature on the topic that deals with conservation research of architectural heritage.

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| --- | --- |
| **(Strengths** | **Weaknesses** |
| - The subject area of study is of important local and national interest for science in general;  - A large number of elements of cultural and natural heritage in a small area;  - Key participants from the sector (from the country and the environment), civil society and the academic community have extensive experience and knowledge about cultural heritage and research in the country and the environment;  - Good communication network at the international, regional and national level;  - Support of local self-government;  - Innovative methodological approach;  - Multidisciplinarity;  - Complete research result;  - Economical application of new approaches and models; - Revitalization of cultural property. | - Inadequate presentations and interpretations; - Preservation of cultural heritage is not high enough on the list of national priorities as far as investments are concerned;  - Insufficient financial resources for solving cultural heritage problems;  - Barriers to hiring/engaging experts (procedural and financial obstacles);  - Lack of equipment needed for proper research and preservation of cultural treasures;  - Overlaps and certain ambiguities in legislation cause weaker heritage management;  - Insufficient number of engaged personnel who are not trained to perform various new roles required for the integral management of the site and the development of tourist services of this cultural heritage;  - Insufficient availability of modern technologies; - Insufficient availability of professional  documentation;  - There is no integrated management system of heritage sites. |
| **Opportunities** | **Threats** |
| - Development of management plans for the sustainability of this specific locality (integrated into the wider picture of the tourist offer of this region) as a regional market leader in the field of tourism as regards the offer of this gem of our cultural heritage;  - Formation of international scientific research teams for further studies of the Paštrovića region, as well as international gatherings on the subject of ancient villas in Montenegro;  -Tourist products and packages of this region are relatively favorable compared to other markets; - The private sector represents a resource that can be used to improve - the support of heritage management and to benefit from private capital;  - Relations with civil society and non-governmental organizations interested in the preservation of cultural heritage can be used to improve visibility, which can ultimately contribute to better protection and management of heritage; | - Insufficiently good planning and development in Petrovac and the immediate vicinity of the site can reduce the attractiveness of the heritage site; - Tourists need multisensory experiences at cultural heritage sites and avoid purely observational experiences;  - Lack of diversity of offer may reduce attractiveness for groups with wider cultural interests;  - Lack of financial resources for further research; - Postponement of research;  - Ownership of the cadastral plot;  - Possible destruction and vandalism in and around the heritage site, due to the impossibility of organizing adequate control and safeguarding of the site itself. |

|  |  |
| --- | --- |
| - Locality - cultural heritage has the potential to become one of the important economic drivers of tourism in this area;  - University - a good resource for creating new capacities in the management of this heritage, as well as for research and interpretation by introducing educational programs of this and other loyalties in the country;  - Faculties and schools can be used to educate society about the importance of this heritage and others in the country;  - Media houses can be used to raise awareness of the importance of this cultural heritage and cultural heritage in us;  - Application of the new conservation model  - Valorization of cultural property;  - Strengthening the branch of culture and science, through establishing the possibility of organizing scientific and professional gatherings. |  |

By using SWOT analysis in conservation research, strengths, strengths, chances and weaknesses, and proposals that can make it impossible in some segments of architectural heritage and natural heritage research will be reviewed, and the percentage of utilization of the potential of opportunities can also be assessed or reviewed.

**5. Concluding general considerations.**

The new approach in the research of the archaeological site Mirište - Petrovac, as its inextricable connection with natural resources, is an indicator of success and quality in the systematic recording of results, giving a better insight into the state of this site and enabling decision makers to make adequate decisions based on real evidence.

The application of a new research platform applied as a case study at the archaeological site of Mirište in Petrovac is a complex procedure that aims to establish a quality protection and revitalization of this cultural asset as well as natural resources without which a community, a city cannot survive. By connecting research, ie by creating multidisciplinarity, we greatly improve one area, one proctor, one extremely important cultural asset.

The conclusion of the research is the research with a system of comparison with other or similar archaeological sites, i.e. comparison, which confirmed the assumption that this rustic villa was built and located using the convenience of the geographical microlocation, in addition to the source of drinking water, the proximity of the forest reserve, the great utilization of the wealth of seafood and protected harbor and its maximum use during export-import. It is located on the Roman road that leads from Cavtat, along the coast via Risan, Kotor, Budva, via Petrovac to Ulcinj (Fig. 30), and an exceptional space for the formation of human communities through time, from prehistoric times to the present day.

Fig. 28. Travel directions of the studied area (Source: google.me/web).

It was mostly built on the model of others from the territory occupied by the Roman Empire. Mostly the same or similar building materials were used, broken stone, wood, roof tiles, mortar, embellished with floor mosaics, the walls of the rooms where they lived, rooms for animals, warehouses for storing food, oil and other necessities, etc. were painted.

On the basis of this Mirište rustic villa, its analysis and research, the appearance of those rustic villas on the territory of Montenegro, which are very poorly preserved, is essentially evoked.

The use of modern technical aids such as unmanned aircraft, 3D scanner, geo-radar, gives incredible data precision, accuracy, savings and speed.

By summing up all the researched and obtained data, one fantastic picture of the cultural landscape is created with all the most relevant features that make it up. The cultural landscape must further be exploited in making a strategy for the strategic development of the commune or community for the benefit of the people, who live there, but also visitors and their new knowledge in the world of history.



Fig. 29. Computer processing - possible reconstruction of part of the villa

In the previous table, a SWOT analysis was presented, highlighting the strengths, weaknesses, opportunities and threats associated with the subject area of study.

The strengths identified in the analysis include the importance of the subject area for local and national interests, rich cultural and natural heritage, involvement of key actors with great experience and knowledge, good communication networks, support of local government, innovative methodological approach, multidisciplinarity, complete research results, economic application of new approaches and models and revitalization of cultural assets.

Overall, the strengths identified suggest that the subject area of study is well supported and has the potential for significant impact, both in terms of advancing knowledge and benefiting local communities. The involvement of key stakeholders, such as civil society and academia, suggests that there is a strong base of support for the research. In addition, the innovative methodological approach and multidisciplinary nature of the study indicate a commitment to rigor and a willingness to explore new avenues of research.

Moreover, the support of local government and the emphasis on cost-effective implementation of new approaches and models suggest a commitment to practical outcomes and the potential for positive impacts on local communities. Finally, the revitalization of cultural assets is an important goal that has the potential to benefit both local communities and the general public. Overall, the strengths identified in the analysis provide a strong foundation for the subject area of study and suggest that there is significant potential for positive impacts and contributions to knowledge.

Weaknesses identified in the analysis are inadequate presentations and interpretations; insufficient investment in the preservation of cultural heritage, lack of financial resources, obstacles to employment and engagement of experts, insufficient equipment for research and conservation, overlaps and ambiguities in legislation, insufficient number of personnel trained in heritage management, insufficient availability of modern technologies and professional documentation, as well as lack of an integrated management system for heritage sites.

The weaknesses identified in the analysis suggest that there are significant challenges facing the subject area of study, particularly in terms of resource constraints and gaps in knowledge and expertise. Inadequate representation and interpretation of cultural heritage, insufficient investment and lack of funding suggest that there may be a lack of public awareness or political will to prioritize heritage conservation. In addition, barriers to hiring and engaging experts, insufficient equipment, and a lack of modern technologies and professional documentation can hinder research and conservation efforts.

Overlaps and ambiguities in legislation and the lack of an integrated management system suggest that there may be challenges in coordinating efforts and effectively managing heritage sites. An insufficient number of personnel trained in heritage management can exacerbate these challenges, especially in terms of developing tourism services and holistic management of heritage sites.

There are significant challenges facing the subject area of study, particularly in terms of resource constraints, gaps in knowledge and expertise, and challenges in coordination. Addressing these weaknesses will require significant efforts by stakeholders in all sectors, including the public, private and academic sectors, to prioritize and invest in cultural heritage conservation and to develop effective management strategies and tools.

Opportunities identified in the analysis include the creation of management plans for the sustainability of the site, the formation of international scientific research teams, the development of affordable tourism products and packages, the use of the private sector to improve heritage management and increase private capital, as well as improving visibility through relations with civil society and non-governmental organizations. interested in the preservation of cultural heritage.

Cultural heritage has the potential to become one of the important economic drivers of tourism in this area, and university and media houses can be used to raise awareness of the importance of cultural heritage. The application of a new model of conservation and valorisation of cultural assets can also provide opportunities for the subject area of study. Strengthening culture and science through the establishment of scientific and professional gatherings can further improve research and understanding in this area.

The opportunities identified in the analysis suggest that there is significant potential for growth and development in the subject area of study. Creating management plans and forming international scientific research teams can help advance research and understanding in this area. The development of tourism products and packages presented in a new way, the use of the private sector and the improvement of visibility can help promote the area and increase public awareness and support for the preservation of cultural heritage.

The potential for cultural heritage to become an important economic driver of tourism in the area highlights the importance of investing in and prioritizing heritage preservation.

SWOT analysis of the site of this specific cultural property in Petrovac, Montenegro, identifies several threats that could affect the preservation and sustainable development of this site. These threats include insufficient planning and development in the surrounding area, which could reduce the attractiveness of heritage sites, as well as the need for multi-sensory experiences for tourists. The lack of diversity in the cultural offer and insufficient financial resources for further research are also potential threats. Ownership of the cadastral plot and possible destruction and vandalism due to inadequate control and protection could also harm the site. However, opportunities such as the creation of management plans, the formation of international research teams and the use of the private sector and civil society to improve visibility and support for heritage management can counter these threats and contribute to the development of the site's tourism potential. All in all, it is important to address these threats and take advantage of opportunities to ensure sustainable management and development of cultural heritage in Petrovac.

The new approach in the research of the archaeological site Mirište - Petrovac, as its inextricable connection with natural resources, is an indicator of success and quality in the systematic recording of results, which gives a better insight into the state of this site and enables responsible persons to make adequate decisions based on real findings and evidence. The application of a new research platform applied as a case study at the Mirište archaeological site in Petrovac is a complex procedure, which aims to establish a quality protection and revitalization of this cultural asset, as well as natural resources without which the community, the city, cannot live and survive.

By connecting research, that is, by creating multidisciplinarity, we are greatly improving one area, one project, one extremely important cultural asset!

The conclusion of the research is that it is necessary to introduce a system of comparison with other or similar archaeological sites, thus confirming the assumption that this rustic villa was built and located taking into account the advantages of the geographical micro location: it is next to a source of drinking water, close to a forest treasure, there is a great potential utilization wealth of seafood, the port is protected and there is a possibility of its maximum use for export-import (then and now).

The strengths identified in the analysis include the importance of the subject area for local and national interests, rich cultural and natural heritage, involvement of key actors with extensive experience and knowledge, good communication networks, support of local government, innovative methodological approach,

multidisciplinarity, complete research results, economic application of new approaches and models and revitalization of cultural assets. The weaknesses identified in the analysis indicate that there are significant challenges facing the subject area of study, particularly in terms of resource constraints and gaps in knowledge and expertise. Opportunities identified by the analysis include the creation of management plans for site sustainability, the formation of international scientific research teams, the development of new technologies for research and conservation, and the development of innovative approaches to heritage management. Addressing the weaknesses will require significant efforts by stakeholders in all sectors to prioritize and invest in cultural heritage conservation and to develop effective management strategies and tools.

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