

LANDSCAPE ARCHITECTURE RENOVATION CONCEPT OF HOMORODLOK - THE SOUND OF NATURE AS VALUE OF THE LANDSCAPE

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Abstract

The relationship between humans and nature is in a constant state of transformation. Humans interpret nature differently, but the undeniable need for a connection with natural areas persists. The value of natural soundscapes in overcrowded and noise-polluted cities is often overlooked. The current survey and conceptual plan aim to develop proposals for the use of the Homorodlok area, taking into account its unique natural characteristics and sounds, as well as the needs of the local population. An important aspect is to showcase the mountainous landscape, highlighting its values while also presenting the impact of human activity on nature. Homorodlok is located in the northern part of Căpâlnița settlement, in Harghita county, Romania, and covers an area of 3.82 hectares. Locals use the area for various events. The diversity of land use in the outskirts of this settlement creates opportunities in some places and problems in others, making it essential to adapt the area for everyday life. The proposal aims to resolve the rural public space of Căpâlnița and strengthen the area's connection with the settlement by developing a plan that considers natural components, including changes in land use, alongside people-centered perspectives.

Keywords: landscape architecture renovation, natural heritage, people-centered perspectives, sound of nature

1. INTRODUCTION

The dynamic interaction between humans and nature undergoes continuous evolution, with diverse perspectives shaping the interpretation of the natural world. Despite these variations, the fundamental human desire and need for a connection with nature and natural environments persists. However, amidst the bustling and noise-polluted urban landscapes, the significance of nature's auditory components is frequently overlooked or undervalued. In urban areas, where noise pollution prevails, the acoustic qualities of nature, such as the sound of flowing water, bird songs, or rustling leaves, tend to be overshadowed by the human-made sounds (Pijanowski et al., 2011). This oversight diminishes the recognition of the profound impact that nature's sounds can have on human well-being and cognitive functioning. The sounds of nature possess inherent qualities that evoke a sense of calm, tranquility, and connection to the natural world. These auditory experiences have been found to promote relaxation, attention restoration, and the overall well-being of individuals. Recognizing the significance of nature's sounds and incorporating them into urban planning and design can contribute to enhancing human well-being, fostering a sense of connection with the

natural world, and promoting a more sustainable and harmonious coexistence between humans and nature.

The surge of environmental concerns witnessed in recent years has brought about an increased emphasis on the utilization of environmental education as a potent tool for disseminating knowledge and providing guidance to individuals in relation to the hazards associated with pollution and the degradation of ecosystems (Ribeiro et al., 2012; Karatas & Karatas, 2016). The increasing environmental challenges necessitate the reliance on environmental education as a powerful tool for disseminating knowledge and raising awareness about the dangers of pollution and ecosystem deterioration. Environmental education, as demonstrated by Ribeiro et al. (2012) and Karatas & Karatas (2016), plays a pivotal role in equipping individuals with the necessary knowledge and skills to address these issues, promoting environmental literacy, and fostering sustainable behaviors and practices.

The tourism industry, being one of the largest economic sectors worldwide, has increasingly embraced nature-based tourism as a significant component of its offerings. This form of tourism involves travel and recreational activities that directly engage with the natural environment, such as wildlife watching, hiking in national parks, or exploring ecologically significant areas. Not only does nature-based tourism provide opportunities for individuals to connect with nature and appreciate its intrinsic value, but it also generates economic benefits for local communities and contributes to the conservation of natural resources. Nature-based tourism is widely recognized as a rapidly expanding segment within the global tourism industry, playing a pivotal role in conservation efforts. While visitation rates in affluent countries have shown a decline based on two distinct assessment methodologies, data from around three-quarters of nations with available information reveal an upward trend in visits to protected natural areas (Balmford et al., 2009).

Balmford et al. (2009) conducted a comprehensive analysis and found that in approximately three-quarters of nations, visits to protected natural areas have actually been increasing. This suggests that the overall trend for nature-based tourism is positive and indicative of a growing interest in experiencing and appreciating the natural world.

The inclusion of green spaces in urban environments and the promotion of nature-based solutions offer a range of benefits to individuals and communities. These areas serve as accessible recreational spaces, providing opportunities for relaxation, exercise, and social interaction. They also contribute to the enhancement of mental and physical well-being by reducing stress, improving air quality, and offering visual respite from urbanized surroundings. Furthermore, green spaces play a vital role in biodiversity conservation, supporting habitats for various plant and animal species.

In order to tackle this issue, the augmentation of green spaces and the implementation of nature-based solutions have been identified as effective measures to improve overall quality of life (Hunter et al., 2017). Increasing the presence of green spaces and incorporating nature-based solutions offer substantial benefits for improving quality of life. By embracing these nature-centric approaches, communities can experience enhanced physical and mental well-being, increased biodiversity, and improved overall livability in urban environments.

2. METHODOLOGY

The research methodology involves two primary components: a literature review contextualizing the subject, focusing on nature preservation, and a comprehensive analysis of the territory through map documentation and a pilot project for the territory, yielding ecological, economic, and social benefits.

The escalating environmental challenges have led to a surge in the adoption of environmental education, aiming to raise public awareness about the consequences of pollution and ecosystem degradation. Through various strategies such as formal and informal education programs, curriculum development, and public campaigns, environmental education empowers individuals with knowledge, skills, and attitudes to address and mitigate environmental issues.

The current survey and conceptual plan aim to develop a proposal for the use of the Homorodlok area, considering the specific characteristics of the natural surroundings and the sounds of nature, as well as the needs of the local population.

3. ANALYSES

Location and historical development

Homorodlok is situated in the northern part of Căpâlnița settlement, in Harghita County, Romania (Figure 1) (Căpâlnița City Hall, 2015).



Figure 1. Location

It covers an area of 3.82 ha and is utilized by the local community for various events. In the 1880s, the area served as a source of income for the locals, while in the 1960s, it was utilized as a residential facility for foresters. Since the 1950s, it has been predominantly used for recreational purposes. The diverse utilization of the area is advantageous (Balázs, 1996).

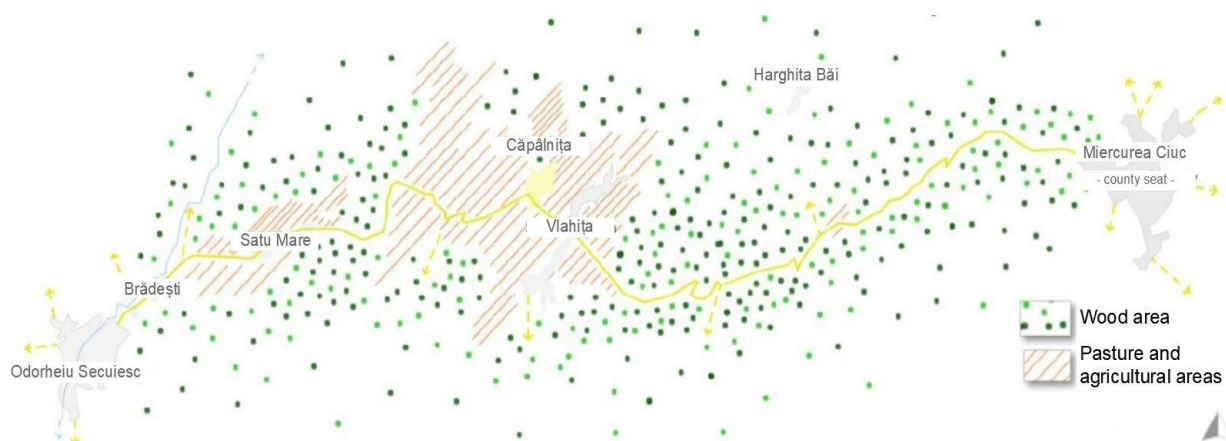


Figure 2. Characteristics of the surrounding area

Căpâlnița is in a mountainous locality, positioned in the western foothills of the Mădăraș Harghita mountains, along the national road DN 13A, halfway between Miercurea Ciuc and Odorheiu Secuiesc. It is predominantly covered by pine forests, with surrounding pastures and agricultural areas (Figure 2). It can be characterized as a well-structured settlement and its streets are not steep. It is located at an altitude of 720–900 meters above sea level. The town is crossed by two rivers, one of which has a deeper bed, for which is called 'Lok', Homorodlok (Căpâlnița City Hall, 2015).

Local vegetation

The flora of the locality is also diverse. The first list of plants of the area was developed in 1989 identifying 176 plant species. Elekes Erzsébet, teacher of biology and botanical researcher conducted in-depth studies in the area and developed a study by which he identified 253 new species apart from those provided in the list previous. Thanks to this work, we know that 429 plant species it is in the natural biosystem of Căpâlnița and the area. These species can be divided into 265 genera, 71 families, 48 orders, 8 subclasses, 6 classes, 2 subtribes and 2 tribes (Căpâlnița City Hall, 2015).

Upon examining the immediate environment in a larger scale, can be observed that spruce forest (*Picea abies*) covers 16.6% of the area, while pasture dominates 32% of the landscape. Agricultural areas account for 23.7% of the land, indicating the presence of herbaceous plants. Noteworthy protected plant species in the area include the angular Salmon's seal (*Polygonatum odoratum*) and catsfoot (*Antennaria dioica*). Additionally, the European larch (*Larix decidua*), deciduous trees, shrubs, and the common juniper (*Juniperus communis*), are abundant (Figure 3).

In Homoródloka, vegetation on the study area, the plant population consists of 33.9% spruce forest (*Picea abies*), 9.8% juniper (*Juniperus communis*), and 54.14% pasture. Herbaceous plants make up only 2.5% of the vegetation, primarily found at the foot of the valley and in wetlands (Figure 3).

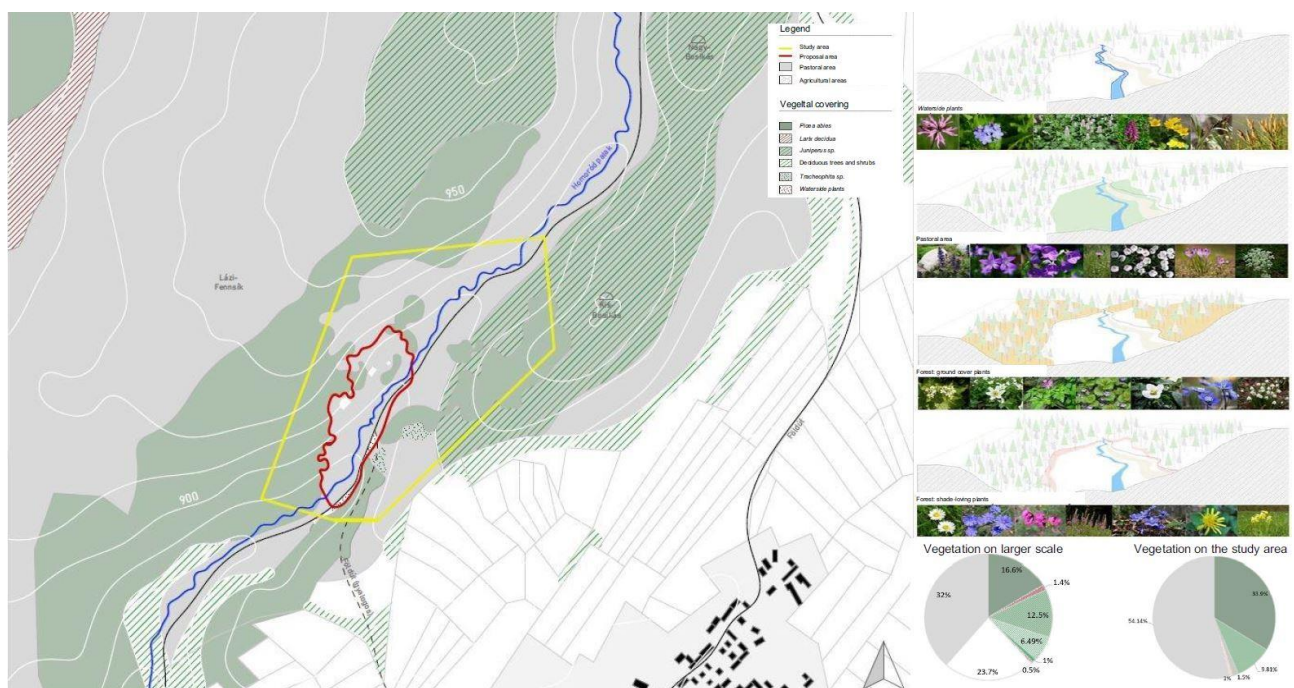


Figure 3. Vegetation analyses

Regarding to the plant inventory of the area, herbaceous plants are scarce and occur in negligible quantities. Furthermore, there is a noticeable absence of shrubs. The lack of reproduction in the herbaceous plant population can be attributed to animal grazing. Eliminating grazing would lead to an increase in the proportion of herbaceous plants, fostering the development of a natural wildflower meadow.

The region is surrounded by hayfields. The natural vegetation in the surrounding areas can be utilized as NBS to aid in the natural reproduction of the study area using the main wind direction for seed dispersal (Figure).

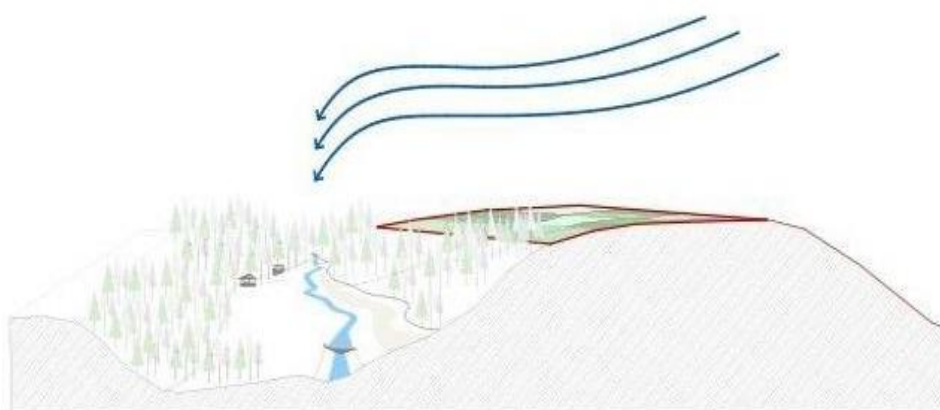


Figure 4. Wind direction

Soil analysis and drainage

The soil in the locality is characterized by loamy texture and exhibits brown and yellow colors. At an altitude of 900 meters above sea level, acidic soil prevails, and the podzolic soil in this region has low natural fertility, appearing as ashen. On the outskirts of the town, one can find large volcanic rocks that remain unexcavated (Căpâlnița City Hall, 2015).

The main issue in the analysed area is at the base of the slope, where landslides frequently occur. Due to the volcanic nature of the plateaus and excessive grazing, the productive layer of soil is minimal, leading to soil depletion, the precipitation that descends from the slope causes soil erosion and degradation at the base of the slope (Figure).

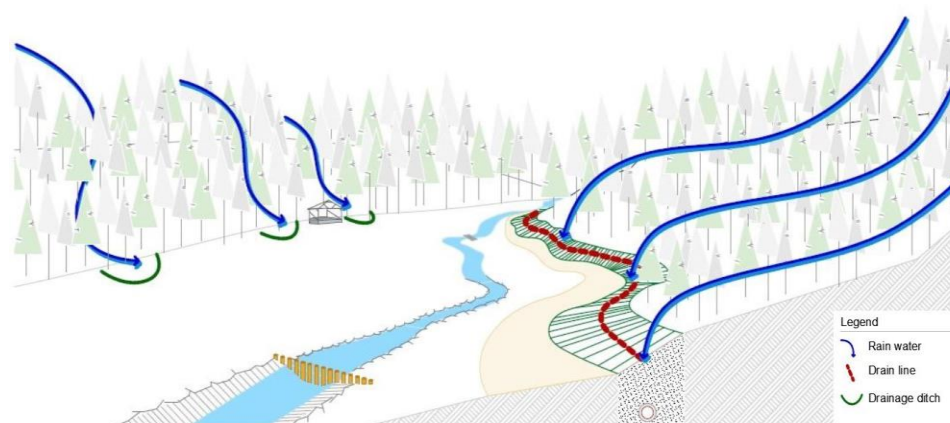


Figure 5. Proposed drain system

Watercourse menedgement

The Homorod stream is a fast-flowing mountain stream known for its pronounced meandering. After thorough analysis, four key issues were identified: (1) streambank erosion, (2) excessively deep streambed, (3) technical deficiencies in the bridge structure, and (4) additional erosion caused by a tributary stream (Figure 6).

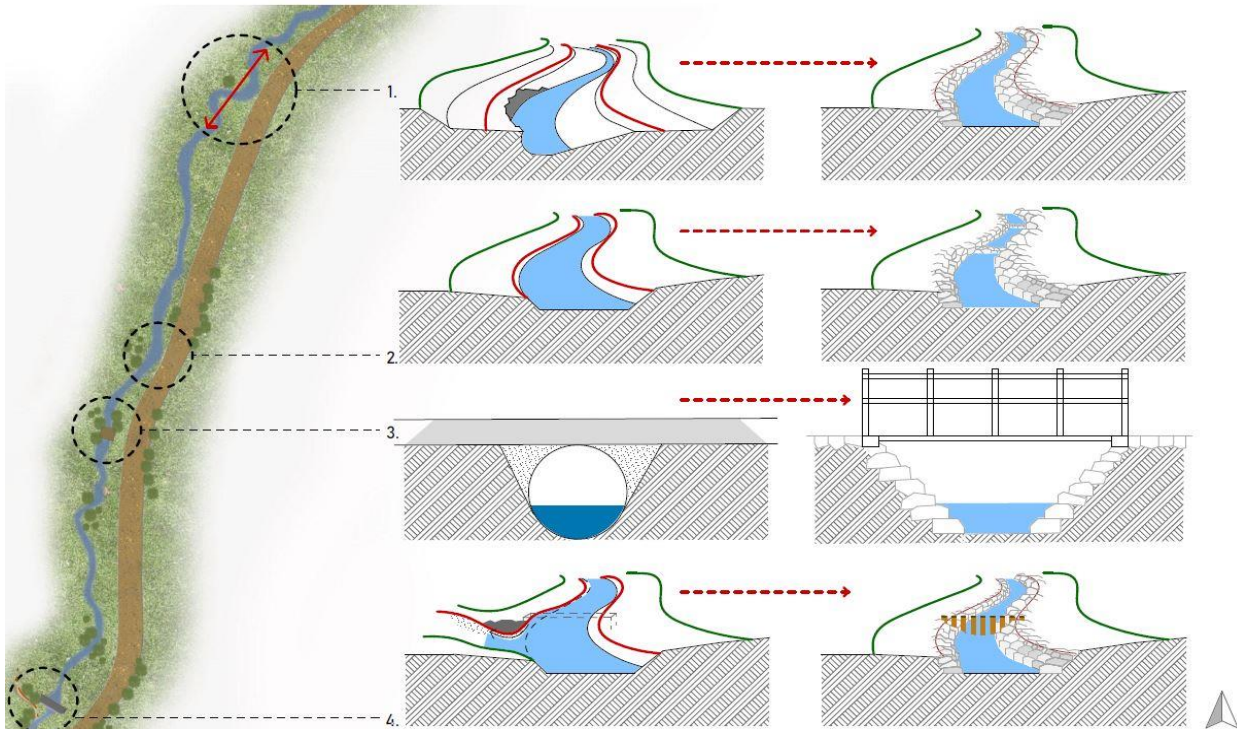


Figure 6. Identified problems and solutions for the watercourse

Visual connections

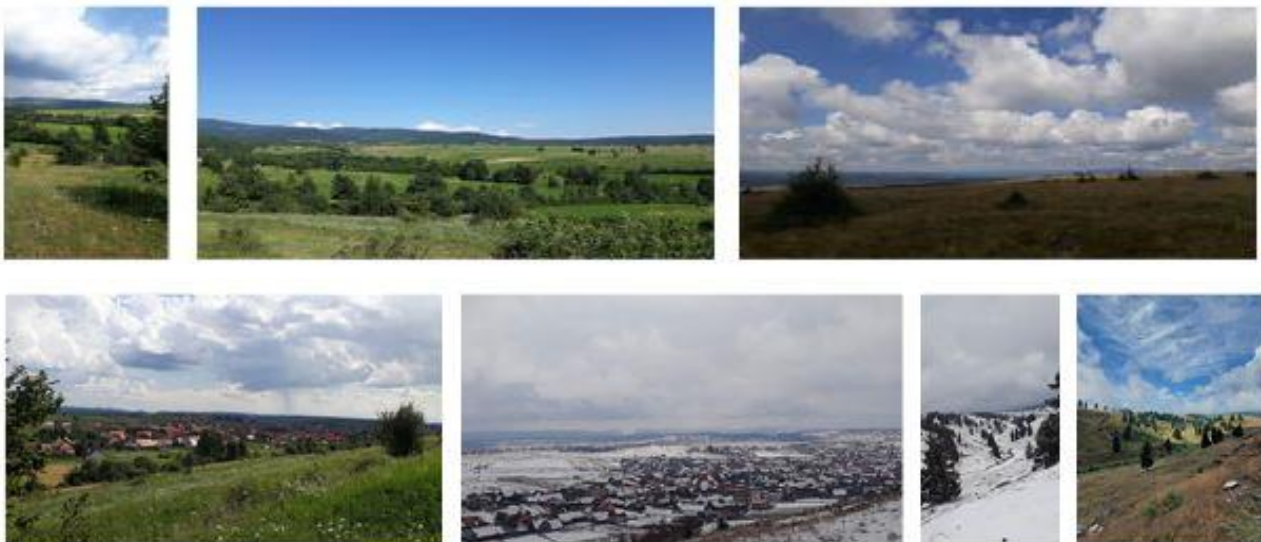


Figure 7. Views

In the Homorodlok area, both internal (design area) and external (analyzed area) visual connections have been examined. The peripheral section of the study area traverses the ridge of the valley, resulting in significant visual connections with notable landmarks such as the Lázi plateau, Vargyas gorge, and Hargita. From a vantage point, a panoramic view of the entire settlement can be observed, and on clear days, the Făgărași mountains are also visible.

The intervention area is surrounded by spruce trees, and as one moves through the open space, it becomes possible to see almost all parts of Homorodlok from any point within the area. The periphery of the study area traverses the ridge of the valley, establishing significant visual connections (Figure 7).

4. CONCEPT AND PROPOSAL

The development of the educational ecological trail is founded on the theoretical framework proposed by Shamala M.M. (2020). According to Shamala's theory, the ecological trail underscores the notion that humans should perceive themselves as guests rather than dominators of the natural world, thereby adhering to the principles and regulations of the natural environment. This approach emphasizes the importance of safeguarding, appreciating, and observing nature while acknowledging the interconnectedness of humans with the natural world (Shamala, 2020).

Across the globe, a multitude of studies have underscored the importance of conserving the plant and animal life along ecological educational trails (Blanco et al., 2021; Silva et al., 2019; Dunkley, 2016). However, there is a scarcity of research that specifically recognizes the significance of incorporating the auditory aspect of nature into these trails.

The concept plan is based on the area's greatest asset, which appears open but maintains a closed perimeter (Figure. 8).

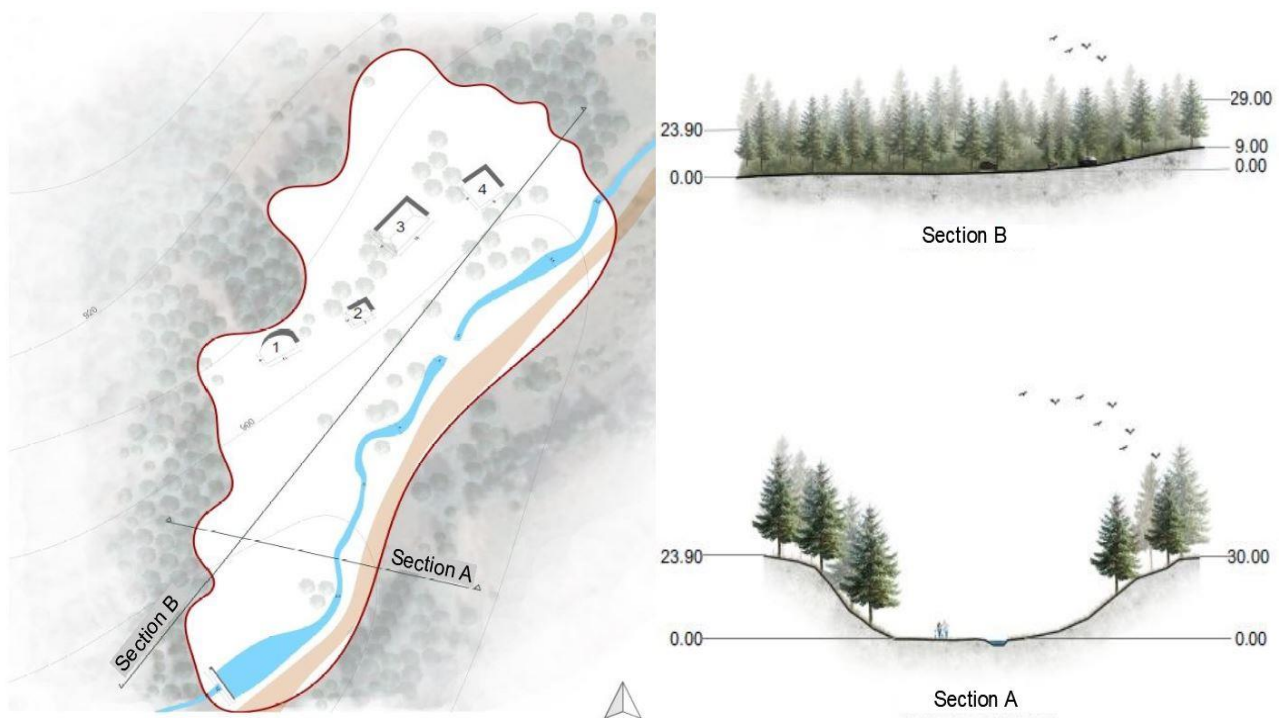


Figure 8. Proposal plan and sections

This enclosure is a result of the area being 500 meters away from the village center in terms of airspace direction. However, due to a 30-meter elevation difference, the noise from the village does not reach the area, creating a natural isolation. As a result, only the sounds present within the area are audible (Figure 9). The motto of the concept is: „the sound of nature as a landscape value”.

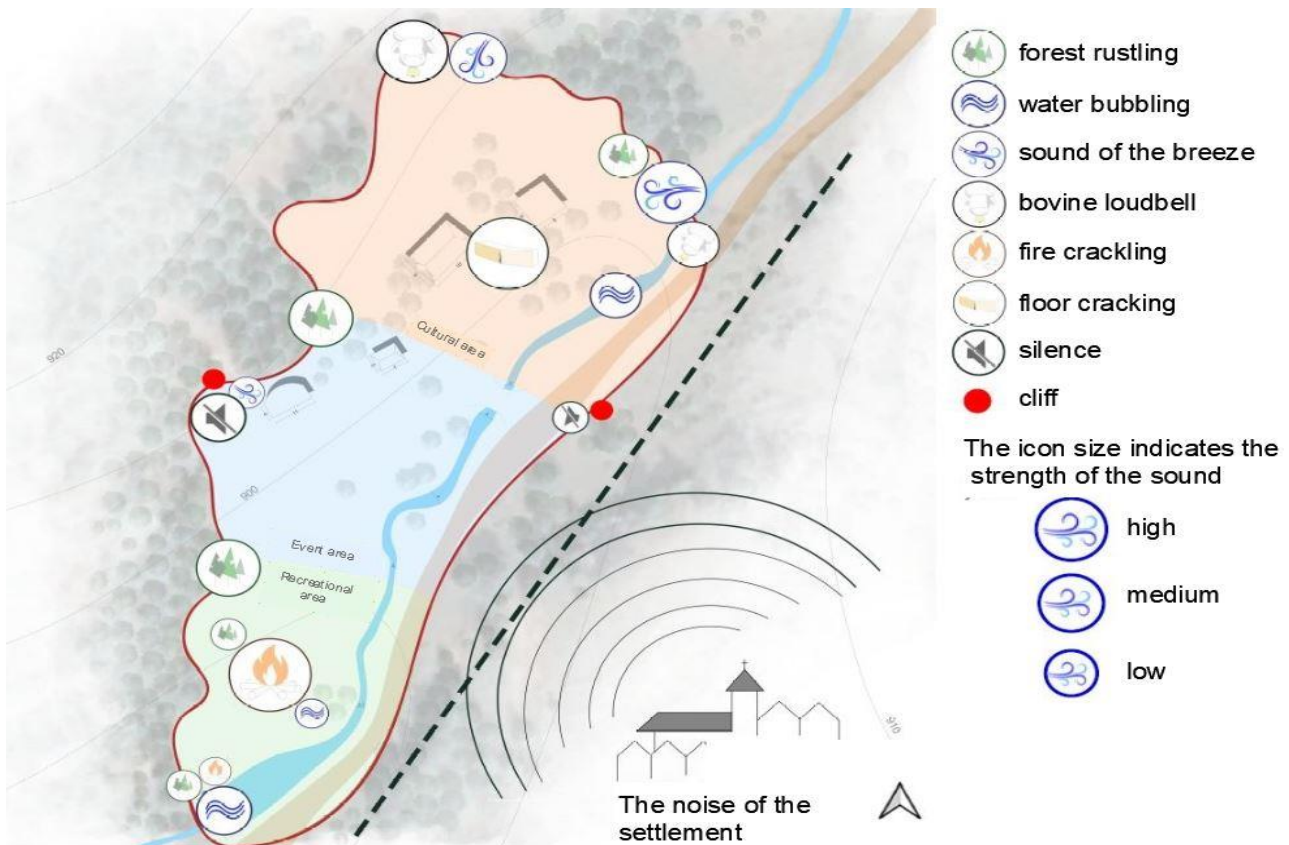


Figure 9. Concept based on soundscapes

The natural soundscape comprises a multitude of rhythms and cycles, particularly in terrestrial animals. Among these, the temporal cycles of communication have been extensively investigated in avian species, amphibians, and insects. These recurring acoustic patterns, collectively known as "the rhythms of nature," represent a significant area of study (Pijanowski et al., 2011).

The educational trail can be perceived as a designated pathway that establishes connections between multiple stations, encompassing a series of ecological attractions along its course (Bajor-Lampert & Bajor, 2018). By traversing the educational trail, individuals embark on a curated journey that exposes them to a range of captivating ecological attractions. These attractions may comprise diverse natural features, including but not limited to picturesque landscapes, distinctive geological formations, diverse ecosystems, wildlife habitats, and intriguing ecological processes. The integration of these eco-attractions within the trail design serves the purpose of providing both educational and recreational experiences for visitors.

The term "eco-attraction" has emerged from the realm of ecotourism studies and serves as a descriptor for natural elements or phenomena that possess inherent allure and hold appeal for visitors (Orams, 1995). The concept of eco-attractions aligns harmoniously with the principles of

ecotourism, placing emphasis on the conservation of natural resources and fostering environmental awareness and stewardship. Through their inherent appeal, eco-attractions offer visitors not only aesthetic pleasure and recreational value but also serve as platforms for promoting sustainable practices and imparting knowledge about the importance of safeguarding ecological integrity. While walking along the ecological trail, can be observed the transformation of nature caused by human influence, such as the conversion of forests into pastures. Also can be appreciated the landscape, the environment of the settlement and intervention area, as well as the agricultural traditions of the region. This educational trail is conveniently connected to existing routes at three points, allowing for easy access. While each point holds its own value, it is best understood as a cohesive unit. Three different routes are proposed for visitors (Figure 10). An important aspect is to showcase the mountainous landscape, highlighting its inherent values, while also addressing the impact of human activity on nature.

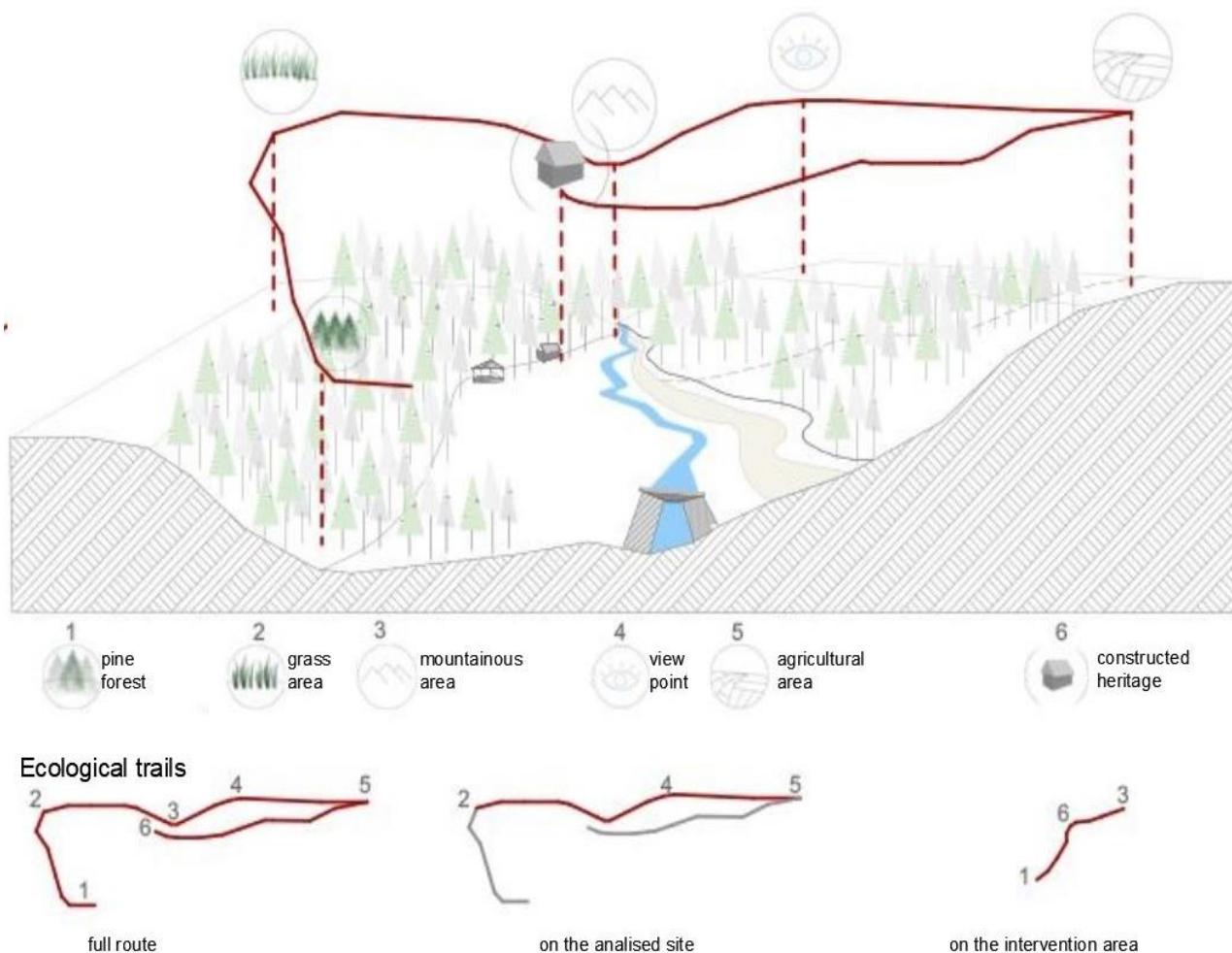


Figure 10. Proposal scheme for the ecological trail

Throughout the ecological trail, the visitor can experience various stimuli that can bring closer to nature, including the scent and sounds of the forest, the babbling of the stream, and the temperature differences between the meadow and the forest (Figure 11).

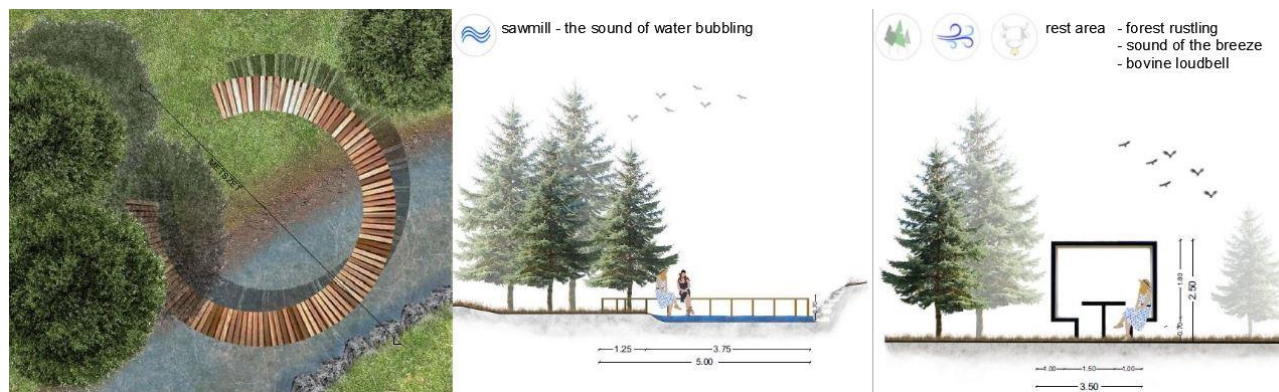


Figure 11. Soundscapes

5. CONCLUSIONS

The proposal offer such solutions that can resolve the deficit of the green area of Căpâlnița, and to strengthen the connection of this area with the settlement, to create a plan that takes into account the natural components, which refers to land use changes along with nature, and is both nature- and people-centered (Figure 12).

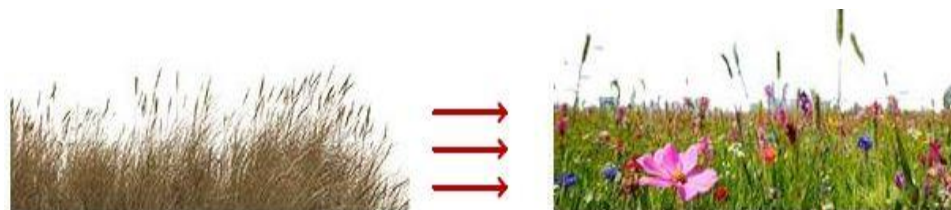


Figure 12. The effect of banning grazing

The proposal aims to regenerate and preserve the natural values of the area, promoting a healthy environment. Through minimal, point-by-point interventions, the objective is to maintain the existing space and its atmosphere, facilitating rather than influencing it. The technical suggestions provided are both necessary and essential considering the current state of the area. It is crucial to acknowledge and address the problems present in the area to achieve its improvement.

An educational and ecological trail is proposed to shed light on the cultural history of the location, including the mountain settlements and the community's relationship with the mountainous landscape. The inhabitants of the settlement recognize the value of their surroundings, as it forms an integral part of their everyday lives.

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