

LANDSCAPE-ARCHITECTURAL DESIGN OF THE OLD ORCHARD IN LOCATION PRESEĽANY FOR RECREATION AND WELL BEING

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Abstract

The current lifestyle is characterized by the limited contact of people with nature. The reasons are related to the decrease of outdoor human activities and the limited accessibility to natural environments. The subject of study is an old fruit orchard on the location Preseľany (Slovakia). Over the years it has become a semi-natural biotope with outcrops to arable land. There are present at least three generations of the fruit trees and species of the indigenous flora which inhabited stand within succession. The site is a biodiversity hotspot harboring plant and animal species. The aim of the landscape-architectural design is to provide access to this space for relax and recreation in contact with the open landscape. The design aims to preserve the intact zone over most of the area and works with the narrative of nature return to the intensively used agricultural landscape. Three functional zones for visitors are proposed in the design - a movement zone, a rest zone and a children's zone. The expected benefits of the proposal are to provide contact with nature and opportunity for environmental education.

Keywords: biodiversity, fruit trees, functional zones, habitat, preservation

Introduction

The contact with nature and the natural environment has a positive effect on people's mental health and well-being, as documented by long-term research in public health and health economics (Van den Berg, 2017; Hartig, & Kahn 2016; Bosch & Depledge, 2015). The attention is paid to the evaluation of the size, structure and species diversity of landscape vegetation, as well as the time and frequency of people's contact with the nature. The experience and interaction are particular topics in assessing the impact of nature on people's mental health and well-being. The experience of people's contact with nature mediates sensory perception, mainly sight, but also hearing, touch and smell (Bratman et al., 2019). Interactions are related to different types of human contact with nature (walks, learning and different forms of physical activity). The design, structure and program of a park or other space for relaxation can therefore have a significant impact on the way users or visitors interact with the natural space (Frumkin et al., 2017).

The area of interest is located in the cadastral territory of the village Preseľany, in the middle of arable land. The fruit orchard of cherries, plums and pears was probably established here in the 1930s. Near the orchard there was a farmstead with a well and equipment for livestock production. In the second half of the 20th century, the location was abandoned and the orchard was no longer systematically maintained. The tree stand consists of several generations of fruit trees, but also a number of plants and trees of the potential natural vegetation. The species structure is a result of the natural rejuvenation of the fruit trees, as well as result of the colonization by plant species within the succession.

The local community is interested in the revitalization and inclusion of the vegetation element in the local system of agro-tourism and recreational destinations. However, the area is a semi-natural habitat for numerous plant and animal species. Thus preservation of the biotic functions of the site was one of the priorities in the landscape design proposal. The aim of the landscape-architectural design is to provide access to this space for relax and recreation in contact with the open landscape and preserve the intact core of the biotope for plant and animal species.

Material and methods

The village of Preseľany is located near Tribeč mountain on the floodplain of Nitra river. The nearest towns are Topoľčany (14,4 km) and Nitra (18,6 km), they are connected with village Preseľany by roads and railway line. The area of interest is a part of the Danubian hills. According to the morphology and the terrain relief, it is slightly and medium fragmented upland

at an altitude of 150-224 m. According to the climatic characteristics (Lapin et al., 2002) the studied area belongs to warm and moderately warm region with moderate winter season with the annual sum of precipitation 610 mm.

The main soil types are Cutani-Haplic Luvisols and Calcic Luvisols, locally eroded and Calcaric Regosols; from loess and Calcaric Fluvisols, associated with Calcari-Gleyic Fluvisols and Areni-Calcaric Fluvisols; from carbonate alluvial sediments. In terms of the soil structure, there are present mainly medium, (loam and clay-loam) soils (Atlas krajiny, 2002). The landscape scenery is made up of fields, vineyards and fragments of forest stands. The agricultural land represents 85% of cadastral area. Non-agricultural land consists of forests 9%, water bodies 16.2%, built-up areas 26.7% and other areas 48.1%.

According to the Map of potential natural vegetation (Maglocký, 2002), the reconstructed natural vegetation in the studied area is represented by the following communities: Ash-elm-oak forests in the basins of large rivers (Hardwood floodplain forests) - *Ulmenion*, Peripannonian oak-hornbeam forests - *Polygonato latifoliae* - *Carpinetum*, Sessile oak and Turkey oak forests - *Quercetum petraeae* – *cerris*.

In the analytical part of the research inquiry, the wider relationships, historical, functional-spatial, traffic, visual and landscape analyses were addressed. The dendrological survey was carried out in accordance with arboricultural standards for assessing the condition of trees (Paganová et al., 2019). The species composition and biological age of woody plants, including trees that may present a higher risk on the site, were determined. Within the field survey, the potential of the site for various types of activities and visitor interactions of with nature were evaluated *in situ*.

Results

The analysis of the historical development of the landscape near village Preseľany (local name Mancickov) shows, that in the 18th century there was a



Fig. 1: A view on the former orchard on location Mancickov near village Preseľany with a dense tree cover and enclave of the arable land (left), drone image.

forest and later some farm for livestock production. The mapping documents from 1914 do not record the existence of any orchard. The presence of farm and fruit trees in a regular

arrangement is recorded on the picture from the 1950s. However, several individuals were already missing from the original planting. Currently, area of the former orchard is covered by high closed stand with an enclave of the arable land reserved as a field for wild game (Figure.1). The aim of the landscape-architectural design is to provide access to this space for relax and recreation in contact with the open landscape. The design aims to preserve the intact zone over most of the area and works with the narrative of nature return to the intensively used agricultural landscape.

In the orchard, the activities and space available for visitors were concentrated in the peripheral parts of the orchard. The central zone of the orchard will remain intact with a wooden fence. The movement of visitors in the space along the revitalized pathway with vegetation cover (low grass and moss) is indicated by the red line (Figure 2). Visitors will be able to observe the area of the intact zone (biodiversity zone) from the pathway (Figure 2, 4). It is an opportunity to become familiar with the natural processes - alternation of generations and changes of species composition. People can see the decay of senescent trees (Figures 5 and 6) and understand the importance of their shade and biomass for the restoration of plant communities, perceive the peace of this place which is developing according to rules of the nature.

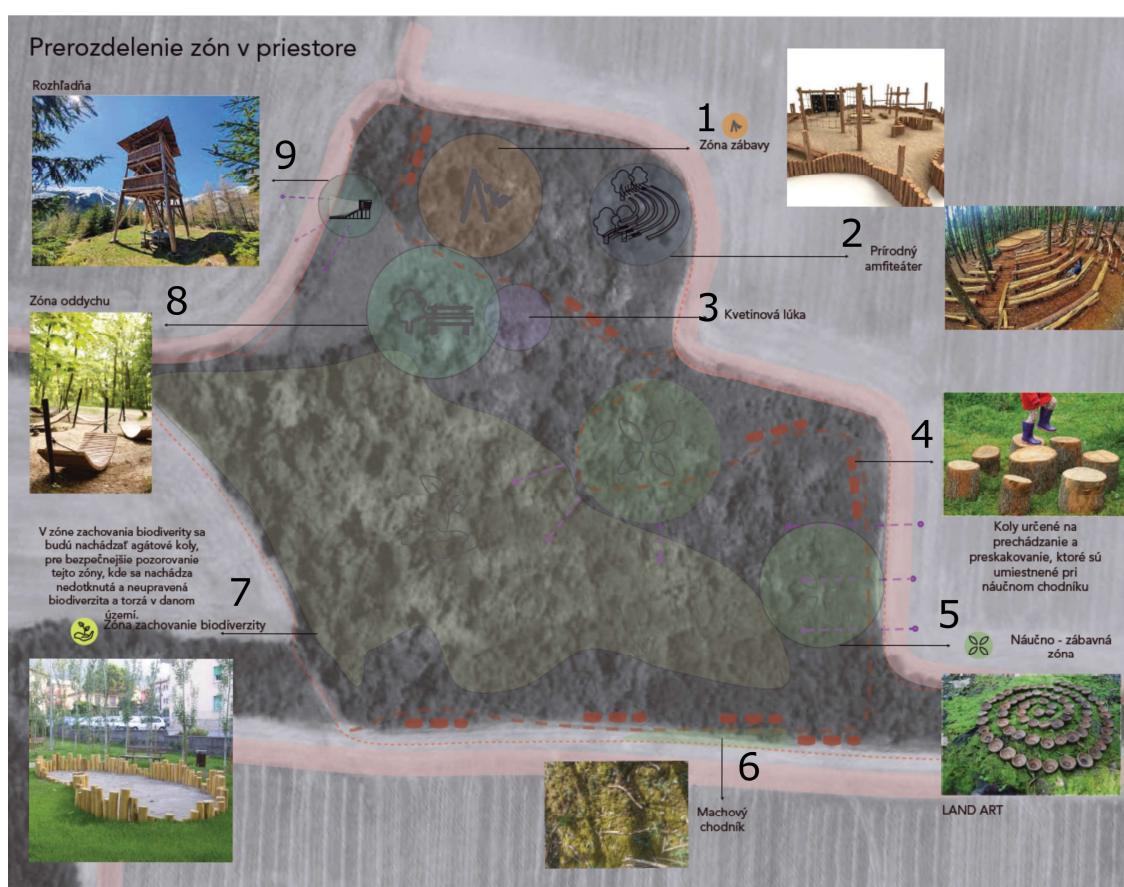


Fig. 2: Distribution of the functional zones in orchard. 1 – entertainment zone, 2 - natural amphitheater, 3 – meadow, 4 – balance wheels, 5 – learning zone, 6 – moss pathway, 7 – biodiversity conservation zone, 8 – rest zone, 9 - sightseeing tower (Authors: Štofíková V., Bilková K., Ptačinová S., teacher / head of the design studio: Paganová V., Kuczman G.)

There were proposed three functional zones for visitors - learning zone, rest and entertainment zone. The learning zone is placed along the pathway (Figure 4) and includes the natural amphitheater with seating and view of old trees (Figure 2). The rest and entertainment zones are situated on the western edge of the orchard (Figure 3). Two floral meadows and a picnic place are designed in the relaxation zone (Figure 3). On the opposite side of the floral meadow there is space for children and entertainment. There are playground elements for children's play and entertainment as well as the observation tower for views of the surrounding countryside.

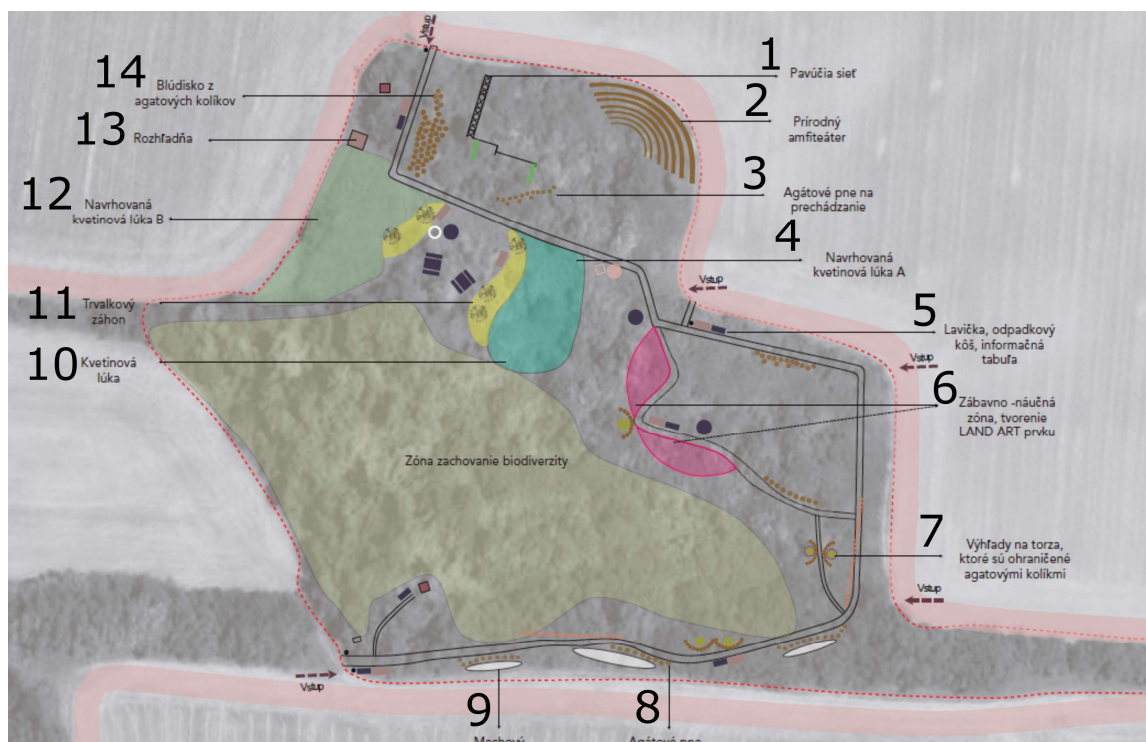


Fig. 3: Landscape design proposal for the old orchard Mancickov. Entertainment zone with playground elements for children 1 – spider net, 3 – balance element, 13 – observation tower, 14 – labyrinth made from black locust stokes, Rest zone with floral meadows – 4, 10 and perennials 11, space for Land art – 6, Learning zone with moss pathway – 9, black locust wheels - 8, view of old senescent fruit trees – 7. (Authors: Štofíková V., Bilková K., Ptačinová S., teacher / head of the design studio: Paganová V., Kuczman G.)

Discussion

The new space concept was inspired by the idea of people's contact with nature through various forms of sensory perception - sight, touch, taste and smell. The mental health benefits from nature experiences may occur through multiple psychological causal mechanisms and pathways, including reduced stress, increased social cohesion or physical activity, or enhanced cognitive capacities (Bratman et al., 2019). Visitors can observe natural processes in the old orchard, perceive the "sounds of the forest", the „smell“ of plants and decomposed wood, relax in the meadows, or have fun in the entertainment zone. They can touch and work with natural materials (rods, branches, shells, pebbles, fruit stones) in the space for land art creation. However, the effects of the nature experience will also depend on the age, gender, current mood and other personal characteristics (e.g. nature preferences) of the visitors (Astell-Burt et al., 2014; Tóth et. al., 2018; Čakovská et al. 2019; Čibík et al., 2022).

Conclusion

The intention of the landscape-architectural design was to sensitively use the potential of this semi-natural biotope for people's contact with nature and mediation of various interactions for visitors. The new elements of the entertainment-relaxation zone (meadows, picnic area, observation tower and playground elements for children) are located on small area in order to minimize the impact on the habitat.



Fig. 4: Visualization of the walkway for visitors around the educational zone and in contact with the open landscape (Authors: Štofíková V., Bilková K., Ptačinová S., teacher / head of the design studio: Paganová V., Kuczman G.)



Fig. 5 and 6: The internal part of the orchard in early spring aspect (February 2023). These are senescent trees of the original planting, approximately 70-year-old individuals with different vitality. The skeletal branches gradually die (left) and tree renews the assimilation area from adventitious shoots (Paganová V.)

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Souhrn

Současný životní styl je charakteristický omezeným kontaktem lidí s přírodou. Důvody souvisí s úbytkem venkovních lidských aktivit a omezenou dostupností přírodního prostředí. Předmětem studia je starý ovocný sad v lokalitě Preseľany (Slovensko). V průběhu let se stal polopřirozeným biotopem v kontaktu s ornou půdou. Rostou tu nejméně tři generace ovocných

stromů a druhů původní flóry, které kolonizovali porost v sukcesi. Tato lokalita je ostrovem biologické rozmanitosti, kde se vyskytují mnohé rostlinné a živočišné druhy. Cílem krajinářsko-architektonického návrhu je zpřístupnění tohoto prostoru pro relaxaci a rekreaci v kontaktu s volnou krajinou. Návrh si klade za cíl zachovat neporušenou zónu na většině území a pracuje s narativem návratu přírody do intenzivně využívané zemědělské krajiny. V návrhu jsou navrženy tři funkční zóny pro návštěvníky – vzdělávací zóna, klidová zóna a herní zóna. Očekávaným přínosem návrhu je poskytnutí kontaktu s přírodou a možnost environmentální výchovy.

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