

Protected area within the city: Monitoring and management of visitors in Landscape park Tivoli, Rožnik and Šišenski Hrib in Ljubljana (Slovenia)

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A quality living environment is an extremely important value in the life of the modern man. Green surfaces are one of the key factors for pleasant living. Ljubljana, which spans on a surface of 275 km² and has approximately 280,000 inhabitants, is rich with green surfaces due to its architectural design. The green spikes that eat into the capital represent an advantage in quality with regard to comparable European cities.

One of the largest and most visited green surfaces is the 459 ha large Landscape park Tivoli, Rožnik and Šišenski Hrib, designated in 1984, spanning within walking distance to the west of the city center. The decree puts a special emphasis on the fact that this park represents the identity of the city of Ljubljana, where natural and cultural elements form a wholesome landscape image.

The area of the landscape park comprises the park-part Tivoli, the central forest part and the western part, including the green stripe along the POT (in the past known as Path of remembrance and comradeship, following the path of the barbed wire that encircled Ljubljana during WW II).

We carried out an extensive research in 2009 and 2010 on the role and importance of the landscape park. By using quantitative data such as counting visitors and charting the strain on certain trails on one side and carrying out surveys and interviews on the other, we attempted to determine whether the area is a value and how to develop it in the future.

We estimate that the Landscape park Tivoli, Rožnik and Šišenski Hrib is the most frequented protected area in Slovenia, as it is visited by about 1,750,000 visitors each year. Even though the Tivoli city park appears to be more frequented than the sloping, forested area, the analysis shows that both areas are similarly frequented. A notable difference occurs on the surface unit (Tivoli park 147 visitors/ha, central forest part 22 visitors/ha). The area is most frequented on Sundays, when up to 20,000 people visit it. Such a large influx to a protected area testifies that a landscape park is an important value in the eyes of the visitors and should be preserved. Park visitors can namely seek a quick and brief refuge from their daily worries. This was also confirmed by the executed survey, which revealed that the survey participants primarily connect the area with recreation, nature, and relaxation.

The answer to the elementary question of how many visitors can frequent a certain area at one time without noticeably endangering the local nature on one hand and still retaining its attraction to the visitor on the other can be partly answered by interviewing the landowners. They stress

the visitors' inappropriate behavior and the need to educate them. We may conclude that the number of visitors is not the deciding factor in determining the carrying capacities, but the visitor "quality" (awareness). Therefore the number of visitors is not, or at least, should not be the only criterion in identifying the carrying capacities of a certain area, although it is the most simple to measure. In addition to the number, the visitor structure is also essential, especially their reason for visiting (recreation, socializing, participating in mass events ...) and their behavior (respectful to the environment, fellow man, aggressive to their fellow man, the nature, the infrastructure). Familiarity with the most important forms of recreation activities is also essential in planning the recreation and recreation infrastructure, as the forms vary in their level of demanded attention, while some may even exclude one another or disturb each other to such an extent that the quality of the recreation is impaired.

Each of the three landscape park parts is recognizable by its specific characteristics, offers different ways of experiencing nature or leisure time activities and offers different habitats for the flora and fauna, which was also confirmed by the survey and the conclusions drawn from the available literature. The most common form of recreation in the forest part is walking, while cycling prevails in POT. One may meet pedestrians as well as bicyclists in the Tivoli park, even though cycling is prohibited there. A greater conflict may be sensed of the level of the less compatible groups of pedestrians and bicyclists, who mostly use the same paths.

The great influx of visitors to the landscape park has led mainly to a conflict between the landowners, visitors, and the objectives of nature and cultural heritage preservation. The numerous contrasts between the participants are impeding the regulation of the conditions in the park and represent a weight to the further area development. With the perceivable conflict of interest in the landscape park, it is evident the area urgently needs a professional manager to connect all the stakeholders and other interested public and prepare a development plan based on the evaluated heritage and zone the areas to satisfy the recreational, social, and aesthetical notions and also some strictly delineated nature conservation areas.

The central forest part of the landscape park that represents the highest value is intertwined with about 85 km of different types of paths (300 m/ha). The problem lies in this intertwining in the area, as it enables the visitors to move freely on practically every corner of the landscape park. It would be sensible to zone the landscape park in accordance with the principle of a thicker net of arranged footpaths on



Figure 1. A distinct conflict between the pedestrians and bicyclists can be noticed in the Tivoli park.

the outskirts and a sparser net in the central part, which involves abandoning some footpaths. Visitations to the Landscape Park Tivoli, Rožnik and Šišenski Hrib will namely be easiest to supervise with deliberate quality and amount of infrastructure in the area and by redirecting the visitors to similar, but less strained locations in the vicinity. Collaboration with the people – informing the landowners, visitors, and other stakeholders will therefore be essential to the project.

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