https://doi.org/10.7250/CONECT.2026.103

INVESTIGATION AND EVALUATION OF THE SOUNDSCAPE OF THE BERNARDINE GARDEN IN VILNIUS

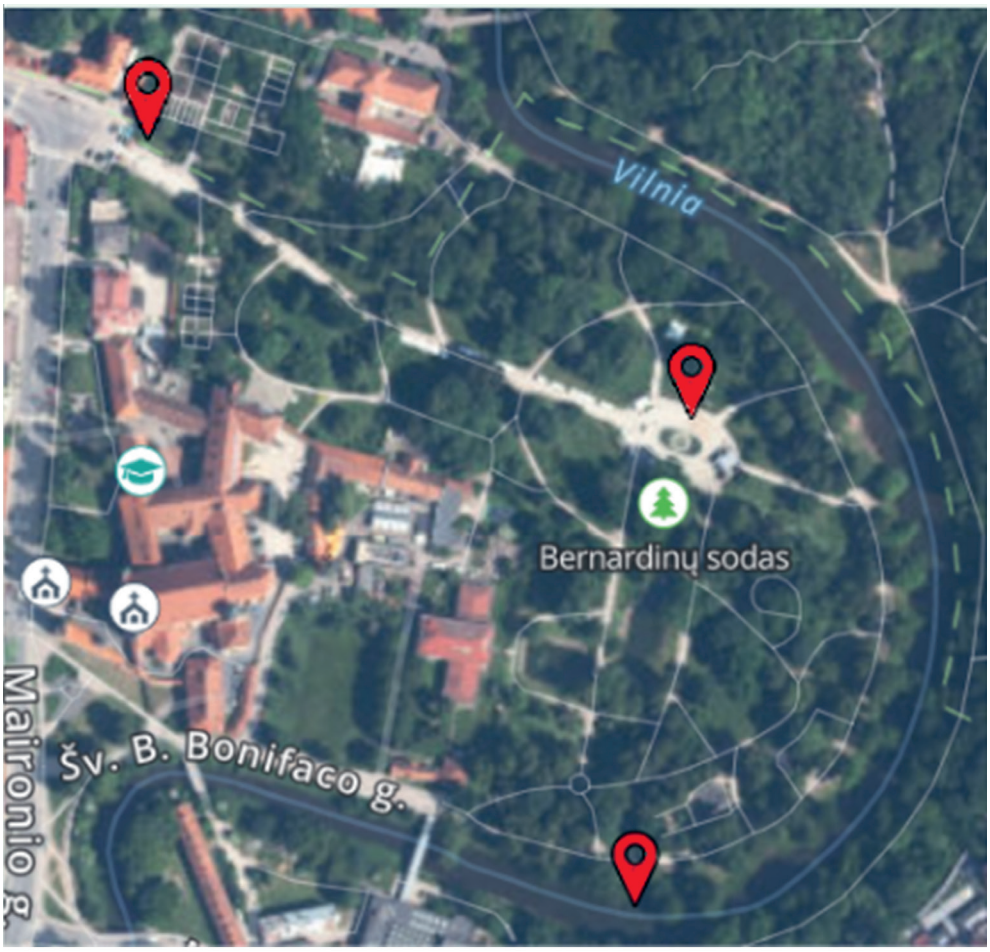
Evelina PETRAUSKAITĖ[1]*, Raimondas GRUBLIAUSKAS[2]

[1,2] *Department of Environmental Protection and Water Engineering, VILNIUS TECH, Saulėtekio al. 11, Vilnius, Lithuania*

* ***Corresponding author.*** *Email address: evelina.petrauskaite@stud.vilniustech.lt*

Abstract – The study and assessment of the acoustic landscape in urban environments is a multifaceted task that requires an understanding of the interaction between sound, space, and human perception. Environmental noise has been recognized as an important form of pollution since the early 1970s and has become an increasingly significant issue with the growth of urbanization. Previous research shows that the acoustic environment can significantly affect human well-being, health, and overall quality of life. While many noise pollution studies focus mainly on objective noise measurements, a comprehensive evaluation of the acoustic environment also requires the inclusion of subjective human perception. Therefore, this study aims to assess the acoustic landscape of Bernardinai Garden in Vilnius by combining objective noise measurements with subjective evaluations obtained through surveys of park visitors. Noise measurements were carried out using a SinusTango^{Plus} sound level meter at several locations within the park at different times of the day, both on weekdays and weekends. Repeated measurements were performed to obtain reliable results and to identify temporal variations in noise levels depending on the time of day and day of the week. The results showed that the highest noise levels were recorded near the main entrance, where urban and traffic noise dominate the acoustic environment. The fountain area was characterized by a mixed acoustic environment in which the artificial sound of water significantly influenced the frequency spectrum and partially masked other environmental sounds. The quietest acoustic environment was identified near the Vilnelė River, where natural sounds prevail and the influence of human activity is lower. Across all three measurement locations, the maximum sound level (L_{AFmax}) ranged from 57.9 to 82.9 dB, resulting in an overall difference of about 25 dB. Meanwhile, the equivalent sound level (L_{Aeq}) varied from 43.8 to 67.0 dB, indicating a difference of approximately 23 dB between locations and measurement periods. Overall, the results show that both noise intensity and its spectral structure vary depending on spatial characteristics and prevailing human activities within the park. Survey results indicate that the acoustic environment is most often perceived as calm and pleasant; however, some respondents also described it as noisy or irritating. This suggests that the perception of the soundscape may vary depending on the time of day or the specific location within the park. The findings highlight the importance of integrating both objective measurements and subjective perception when assessing and managing urban acoustic environments.

Keywords – Human perception; noise pollution; soundscape, subjective and objective assessment; urban environment



Study area with marked measurement points (at the main entrance, near the fountain, and by the river)