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In Bernardine Garden, noise levels vary significantly (up to ~25 dB): loudest near the entrance (traffic) and quietest by the Vilnelė River (natural sounds). The soundscape is mostly pleasant but occasionally disturbing, showing the importance of combining measurements with human perception.

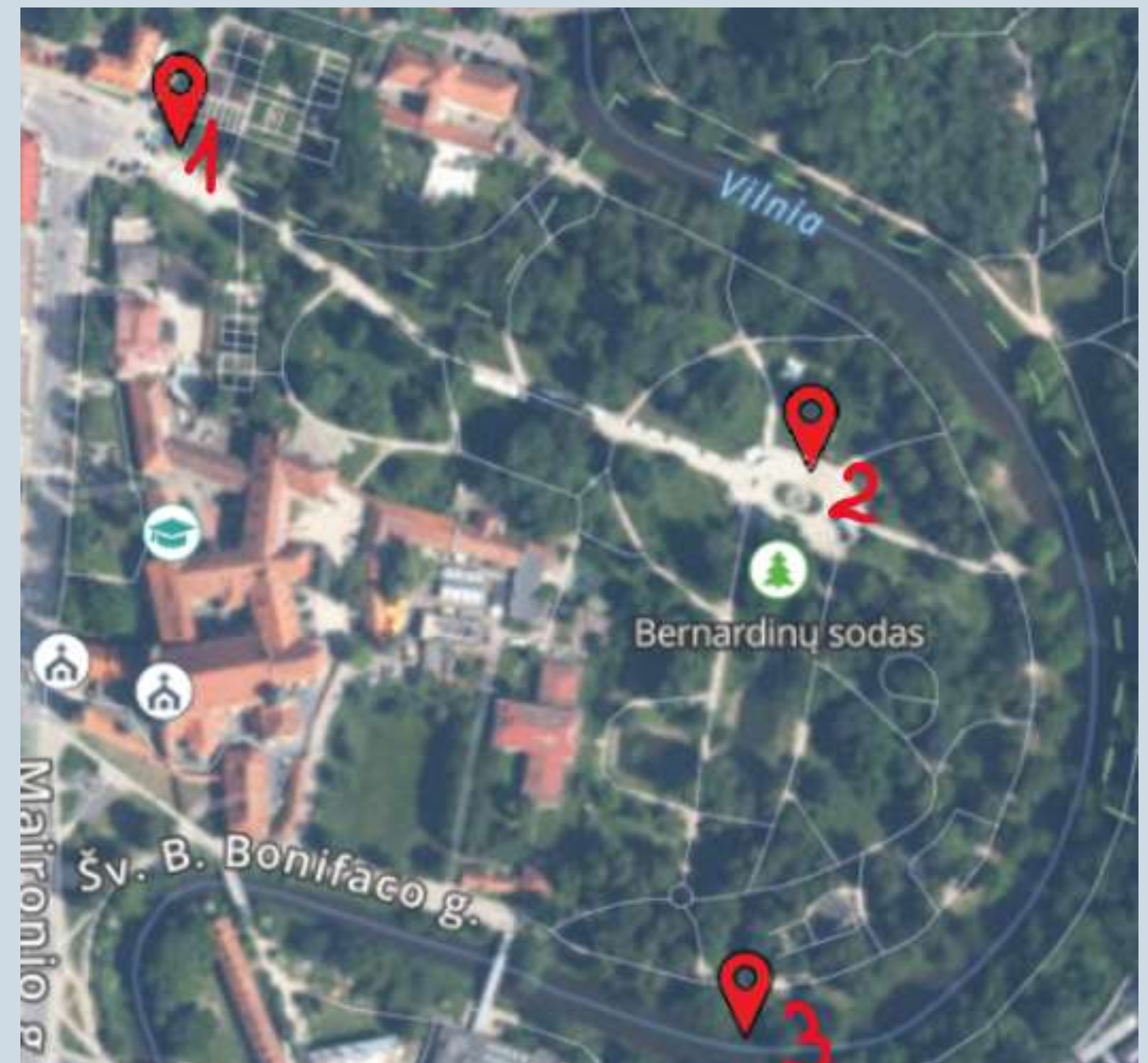


Fig. 1. Soundscape analysis locations on Bernardinai Garden area

Introduction

Urban acoustic quality is an important part of environmental comfort and strongly affects people's well-being. Increasing urban noise can negatively impact health and quality of life. Modern approaches focus not only on measuring noise levels, but also on how people perceive the sound environment.

This study analyzes the acoustic landscape of Bernardine Garden by combining noise measurements and user perception to identify key issues and propose improvements for a better urban sound environment.

Methods

This study aims to assess the acoustic landscape of Bernardine 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 (Fig. 1.) 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.

Results

The highest noise levels were recorded near the main entrance, where traffic and urban activity dominate the acoustic environment. In contrast, the fountain area exhibited a mixed soundscape, with water sounds partially masking surrounding noise, while the quietest conditions were observed near the Vilnelė River, where natural sounds prevail and human activity is lower. Across all locations, LAF_{max} ranged from 57.9 to 82.9 dB (about a 25 dB difference), and LA_{eq} from 43.8 to 67.0 dB (about a 23 dB difference) (Fig.2.), highlighting clear spatial variation in noise levels. Survey results indicate that the environment is generally perceived as calm and pleasant; however, some respondents also reported experiencing noise and irritation.

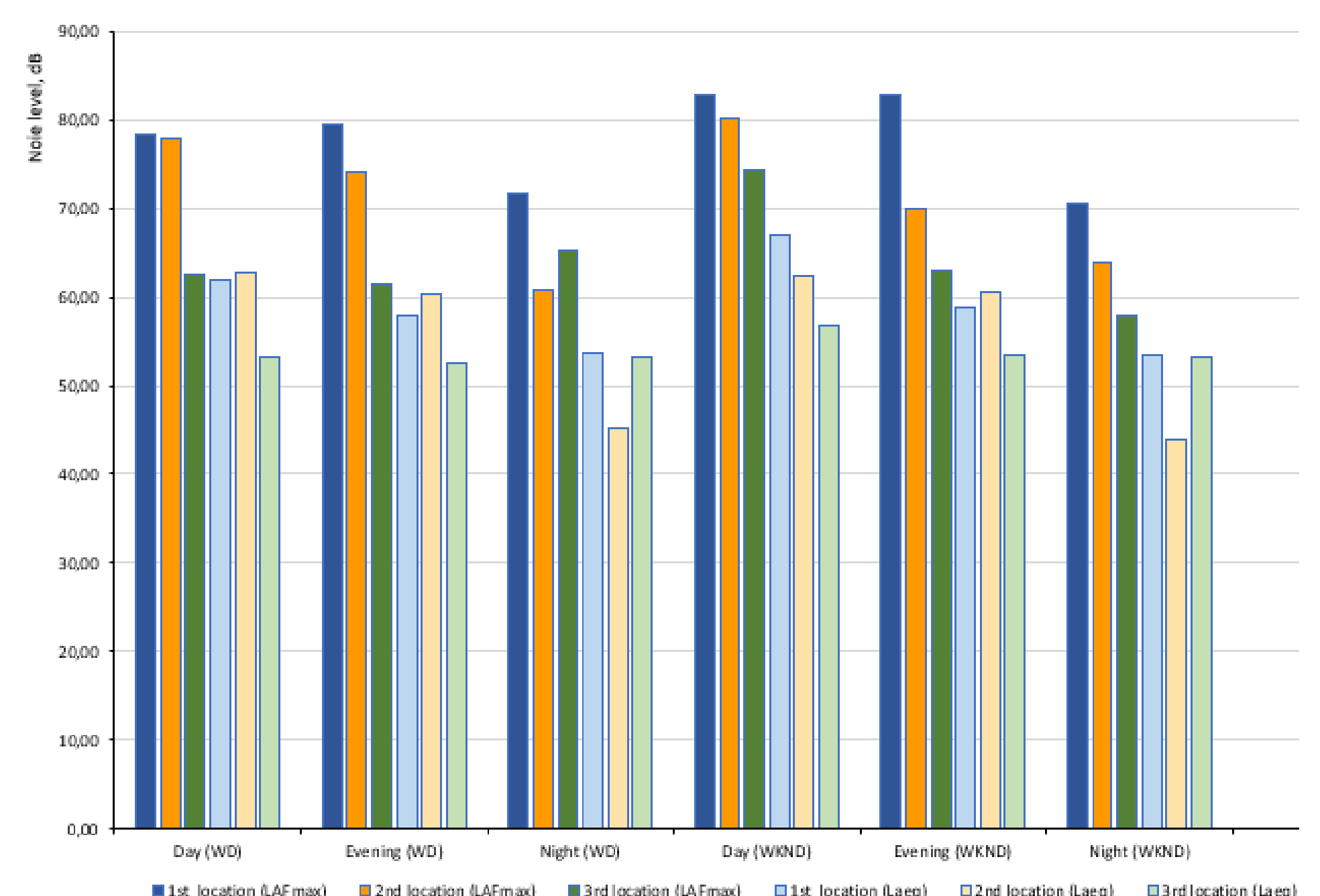


Fig. 2. LAF_{max} and LA_{eq} results in all locations during workday and weekend