

Developing standard procedures for visitor counters calibration in Czech Protected Landscape Areas

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Introduction

Monitoring visitor use is critical to protect the protected area resources for future generations and provide high-quality experiences for visitors (Loomis, 2000; Manning, 2008).

In the Czech Republic, protected landscape areas (PLAs) are one of core components of the conservation strategy and, as such, visitor data are needed to inform and support sustainable management of these areas. With this effect, automated counting devices have been used since 2009 as means for estimating visitor use and today there are more than 100 automated visitor counters located in 17 protected landscape areas (out of 26 PLAs in total) and other protected areas managed by the Nature Conservation Agency of the Czech Republic (NCA).

The fact that visitor estimate is being conducted is very positive but concerns regarding visitor data accuracy have emerged among State Nature Conservancy authorities. This is due to the fact that there's a gap on standard methods to collect and calibrate automated visitor counters as visitor estimation has been performed by two contracted companies. In response to this concern, this paper reports on the preliminary stages of a study that intends to contribute to the standardization of visitor monitoring procedures, regarding collection and related calibration issues, in three Czech PLAs: Blaník, Brdy and Jeseníky.

Materials and Methods

Study sites

Considered PLAs (IUCN category V) are located in the Olomouc and Central Bohemian Region and their selection follow a direct recommendation of the NCA. All sites contain marked trails for pedestrians and cyclists, well-established infrastructure available during summer and winter season, and natural attractiveness, making them increasingly popular tourism destinations within the country.

Visitor numbers for the study sites are monitored since 2009 (Jeseníky), 2014 (Blaník) and 2016 (Brdy), respectively, by two contracted suppliers using different pyroelectric devices (Jeseníky - 12 profiles, Blaník - 2 profiles; Brdy - 14 profiles) and performing distinct calibration procedures to correct direct data from automated visitor counters. As such, the distinctive methodological procedures applied are generating particular calibration coefficients (CC) and producing estimates of the numbers of visits that are difficult to compare on a regular basis among PLAs.

Management and methodological concerns

To develop the main problem and objective of the study, the following methodological questions were considered based on NCA management concerns:

- What range of CC values are acceptable, when the NCA hires third party services?
- What are the factors influencing the CC values (e.g. material; service; managerial; local characteristics, etc.)?
- What is the best way of using the CC when two or more direct observations have been performed and the CC value differs?
- What is the best scheme for calibration measurements?

Thus, the study focuses on calibration procedures rather than theoretical approaches, that will be tested and implemented through the year.

Methodological Approach

In order to achieve the proposed objective of development a standardized visitor monitoring system (collection and calibration survey) that can be implemented as a part of the management routine, the methodological approach is divided in three sub-stages (Figure 1):

- Collection of visitor numbers from automated counters. As devices are owned by two private companies, data from the existing automated visitor monitors will be requested together with assessed CCs for further analysis and comparisons;
- Observation survey of real visitor incidences' at each site, by recording the number of visitors passing through a counter sensor during a 10 hour period and collection of additional variables (e.g. type of use, group size, direction of travel, number of dogs off leash and time of visit). Direct observations will be performed during certain random days (week and weekend) of July and August

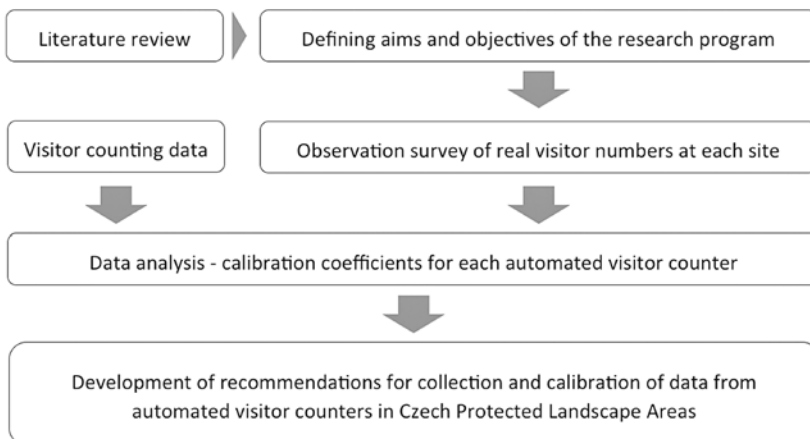


Figure 1. Schematic representation of the methodological stages

- Data analysis to determine CC values for each counter. Results are used to estimate the mean hourly, daily, monthly, and season for each counter with the idea to compare with values assessed by suppliers.

Project expected benefits

Since limited research has been performed lately regarding data collection and accuracy issues on monitoring visitors with automated counters, the proposed project intend to be an important contribution to the current knowledge of trail counter calibration in protected areas.

From the practical point of view, the information produced will be used to establish a standardized methodology to collect and calibrate automated visitor monitors, and thus providing reliable and comparable estimates of visitor use for the management of Czech protected areas in a sustainable manner.

Acknowledgements

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