Methodological questions raised from visitor monitoring in the Czech Republic

Ondrej Vitek, The Nature Conservation Agency of the Czech Republic, Czech Republic, ondrej.vitek@nature.cz

The Nature Conservation Agency of the Czech Republic (NCA) manages 25 protected landscape areas and the most of national nature reserves and monuments. Visitor monitoring using modern automated counters began in 2009 and has developed so far into a centrally controlled system. In 2016 there are more than 100 permanently monitored profiles. Data and its evaluation is outsourced, two companies have been successful in the contract competition. Basic methodology is given in contracts, but the companies differ from each other in detail. Similar visitor monitoring is realised in four Czech National Parks as well, know-how is shared between NCA and NP authorities. Adjustment of new contracts rises several methodological questions discussed in the contribution. The aim is to share the best practice and notify scientists about questions to be solved by applied research.

Requirements for methods

Methods used for visitor counting (including data collection as well as evaluation) should meet following requirements:

- They should produce the best available quality of the information.
- Their results should be clear to protected areas managers, who have usually only basic knowledge in visitor monitoring methods.
- They must be detailed enough that companies can calculate the closing price of the contract for a competition.
- They must be performable for contractors and not rise the price too high.
- They must be reviseable to easily detect, whether obtained results meet the contract terms and conditions or not.

According to current Czech legislation and NCA lawyers the price is the only evaluation criteria in the contract competition.

Concrete methodological questions

Calibration

Questions and current settings at NCA:

1. How often and in what season the physical calibration should be done? At the beginning of monitoring at a profile and then every 2 years. Always twice: in a high season and in low season, but it seems the mid season would be better instead of the low season because of too low numbers in the low season.
2. How long should be done the physical calibration? Not defined, the contractors perform calibration for 6 hours.

3. What calibration coefficient values range is acceptable? 0.75-1.5; values outside this range should result in profile redesign.

Calculation and application of the calibration coefficient is a subject to a detached contribution (Monteiro & Vitek).

Individual visitors number or passes count?

At a typical profile, number of passes is registered and presented, as there is no way how to detect repeated visitation of the same individual visitor. Such numbers are the only useful e. g. for detection of trampling effect on vegetation. At some special profiles, e. g. at a staircase of a lookout tower, the passes count is divided by two as it is clear, that everyone must go once up and once down. Such recalculation discourages comparison of results from different type profiles and definitely does not provide true number of individual visitors, as the same visitor could come to the place more times in a year. But only such recalculated values can be compared to numbers of sold entrance tickets and similar data.

Estimation of numbers for failure periods

During failure periods a counter gives false data. It could by caused by various reasons. As NCA does not require GSM data transfer due to its financial demands, contractors should check the counter status at least every 2 months. Therefore the failure periods could last up to several weeks. Continuous data series are needed for trends detection and cumulative values comparison (e. g. monthly periodicity), what encourages an estimation of missing data. No methodology for such estimation is set by NCA and sometimes the opinions differ between NCA and a contractor. The missing data are being calculated in correlation with a similar profile using correlation coefficient that reflects the ratio of visitor numbers.

Questions and solution proposed by NCA:

- Which periods should be used for correlation? Two weeks before and two weeks after the failure period should be fine for shorter failure periods, longer time for longer periods.
- Which profile to correlate with? If data from the same period in last year(-s) is available, then a profile with the most similar time behavior during this period should be used. Otherwise a profile with the most similar time behavior during the monitored period should be used. Profiles chosen only by similar visitation rate or the nearest profile may not give appropriate results.

Optimum contract period

From the administrative point of view, the easiest way for NCA is to sign contracts for individual years from January 1st till December 31st. This causes following problems:

- A contractor could change each year at the same profile.
- As downloading data from the counter could be dangerous for the technology or the area when covered by snow or in frosty soil, sometimes the data are available later then after standard three months.

- Most of the data are being downloaded and evaluated in the same period from January till March and submitted to NCA usually on March 31st. This makes the responsible people very busy these times.

Suitable solution would be to sign contracts for approximately three year periods that will end in spring or early summer – diversified according to altitude of the profiles.

Conclusions

The proposed solutions are not stated as the best way. Upon experience from other areas or appropriate applied research they can be set differently. Whatever reactions are welcome.