

QUANTITATIVE VISITOR MONITORING RESULTS APPLICATION

Ondřej Vitek

Agentura ochrany přírody a krajiny České republiky, Kaplanova 1931/1, 148 00 Praha 4, Czechia

<https://doi.org/10.11118/978-80-7509-831-3-0264>

Abstract

The Czech Nature Conservation Agency collects visitor-monitoring data through automated counters since 2009. Contracting as well as data management have been centralised, harmonised, and made available for all employees as well as for partners. The profiles in protected areas are of various character, from roads to tiny paths with restricted access, from vehicles through cyclists to walkers and canoes.

Visitor monitoring data is valued source of information. Accurate data is utilised as an undisputable argument. Long-term profiles show overall trends in tourism and can detect changes e.g. during Covid-19 pandemic as well as before and after a lookout tower construction. Counters on paths with restricted access can help to evaluate effects of various measures. Oscillations within an average day, week as well as year can help planning visitor centre operating hours, ranger service, and construction works. Total and maximum numbers on trails help define necessary parameters of visitor infrastructure. Real numbers of vehicle traffic can evaluate the policy of issuing vehicle entry permits. Damages on nature can be compared with counter data to determine if visits are the cause.

Key words: automated counters, quantitative monitoring

Introduction

The Nature Conservation Agency of the Czech Republic (NCA) runs visitor monitoring using automated counters since 2009. As a state agency, NCA must clearly argument effectiveness of money spent. Review of visitor monitoring data values can inspire other subjects to start their own monitoring, too.

Materials and methods

Automated visitor counters are one of the methods used for visitor monitoring worldwide. Several producers offer their counters following a common pattern: detection of objects passing through a profile. Such a profile is usually placed across a trail, road or another type of corridor used by visitors to an area. Device properties (sensors, GSM data transmission, etc.) and data outputs can vary based on the needs of a customer.

NCA uses data from two contractors. Since 2009, methodology was subsequently improved to serve needs the best and to harmonise outputs between the contractors to allow evaluation of combined data. Counters monitor walkers, cyclers, motorised vehicles, and/or canoers inside protected areas managed by NCA. Basic interval is 1 hour. Data is downloaded manually four times a year and uploaded into a common internet based database (Eco-Visio). The database is accessed by NCA employees from all branches of the organisation located all around Czechia.

NCA publishes brief evaluation of visitor monitoring data annually, usually in May. Some results are published occasionally at conferences or in media on request.

Results

The highest number of monitored visitor profiles at NCA was reached in 2016: 107 profiles. In 2022, due to budget limitations, NCA runs only 49 profiles.

The data from visitor monitoring are basically important to create **objective overall image of visitor movement** in the localities (along roads and elements of visitor infrastructure, at what time of day or night, how the traffic is distributed within a week or a year). According to the results, it is possible to predict periods of higher visitor use and plan various events accordingly (either positively - use the increased attendance for education, and negatively - send the nature guard to the right place at the right time, or suitable timing of measures). The results are also often used in negotiations with partners on land use. They are also very valuable for establishment of new protected areas. Authors of studies or academic works are often interested in visitor monitoring results. Data from long-term measurements are a necessary starting point for **research of the impact of visitor use** on subjects of protection. If we monitor visitors, we are able to react relatively quickly and take measures in favor of nature protection and at the same time prevent damage to nature. Without visitor monitoring,

negative changes in the environment are being recorded after a longer period of time, and correction is then very costly, if not impossible.

The **long time series** of measurements at most sites shows a slight increase in visitor use. However, there are also locations with stable or even declining use. An example of a permanent increase is the northern access road to the top of Lysá hora in the Beskydy Protected Landscape Area (PLA), see Figure 1. Visitor monitoring there was launched back in 2009. For the first full year of the monitoring (2010), 59,000 passes were recorded. Numbers have been rising almost linearly since then, with the exception of 2017, when there was a temporary decline. By 2020, visitor numbers had already reached 205,000, which means 3.5 times with no indication of possible change. If continued, situation over the next 10 years with this trend is unacceptable to most people today.

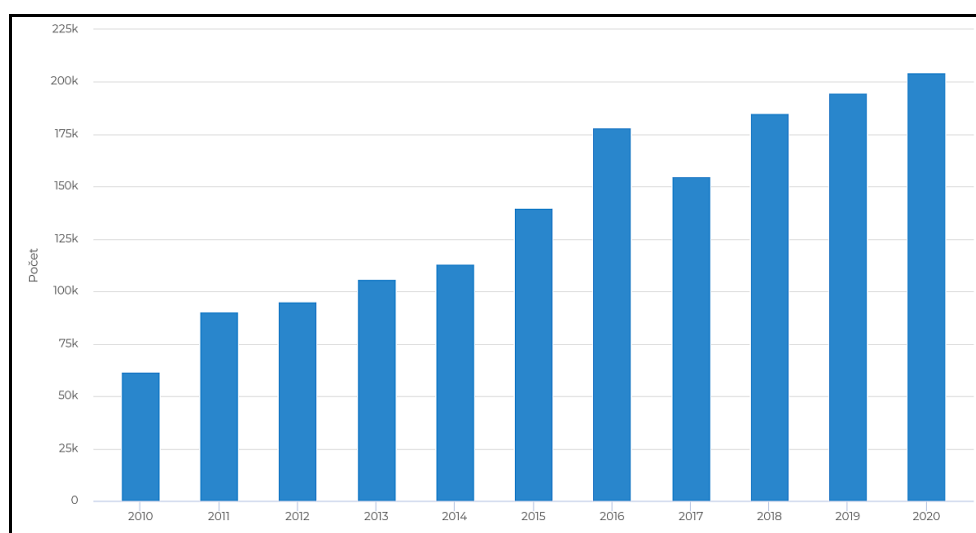


Fig. 10: Number of passes on one trail reaching the top of Lysá hora showing the trend in the period 2010–2020.

In the Křivoklátsko PLA, visitor monitoring started in 2010. Based on the data, a basic overview of the development of visitor use at profiles **in the considered National Park** over the last 10 years has been prepared for discussions with the mayors. Based on our data, we can seriously and demonstrably reject one of the mayors' arguments that there are too many tourists in the municipalities, because the number of visitors does not correspond to their concerns and there is only a slight increase in some localities. We can usually explain the reasons for the increase (eg new tourist infrastructure or, conversely, its damage, weather developments, pandemics, etc.). Municipalities, on the other hand, have usually no objective data about tourism intensity.

A study of the socio-economic impacts of discussed establishment of a nature reserves network or a PLA was compiled for the **negotiations on the protection** of the Soutok basin in South Moravia. Visitor monitoring data was one of the important inputs and thanks to them the study could bring significant results. Thus, we have not only a sophisticated estimate of the economic benefits of the current level of attendance in the area, where visitor use potentially increases the annual production of the regional economy by CZK 207 million. Additionally, we also know that conservation through the nature reserves network will attract more visitors and increase production by 19% and in the case of PLA even by 42%. It can be concluded that the category of NP proposed by the Government of the Czech Republic would increase the attendance even more, but this option was not the subject of consideration at the time of commissioning the study and therefore the study did not address it. Due to the fact that the study took place in a period strongly influenced by anti-pandemic measures, the visitor use of Soutok was compared with the changes in visitor use at nearby Pálava PLA, where the monitoring has been running for several years. And thanks to this, it was possible to estimate how much the current Covid-19 visitor use differed from the normal one.

Visitor monitoring provides important data on paths where **public access is currently prohibited** in national nature reserves (eg Kněhyně, Císařská rokle, Doutnáč). Thanks to this, we know how many people and when they most often violate the entry ban. We have also verified effectiveness of various measures to prevent entry. For example, the single placement of information signs at Kněhyně led to no change, only a thorough barrier from the cut branches helped later.

Thanks to the visitor monitoring at Radhošť and Praděd, we know not only walkers numbers but also **the number of passing cars**. So we know exactly to what extent car traffic corresponds to the

number of permits issued. The measured data not only help us in negotiating with real estate operators about the necessary regime, but also serves as an important guide in issuing permits in general.

NCA has long been criticized for admitting uncontrolled visitors to the Dog's-tooth-violet site in the Medník National Nature Monument (NNM). The movement of a large number of people around the site is said to lead to trampling and loss of individuals of this critically endangered plant. Counters found that the **claims of thousands of visitors were wrong**, the daily maximum at the time of flowering was 250 passes.

In the Drbákov - Albertovy skály National Nature Monument, where the locality is attractive for tourists with viewpoints and an educative path, the counter has shown a significant increase in visitor numbers in recent years (Covid-19). It is possible to prove a **direct connection between the increase in the number of visitors and the trampling** of various shortcuts, side paths, **and damage** to the visitor infrastructure. The data from the counter are an important basis for management of the marked trail network and planning the trail repair costs.

The counter in Kaňk NNM confirmed regular balanced attendance independent of dates, corresponding to short walks around the residence. The data is **essential for negotiations with the Town Hall of Kutná Hora as the owner** and the most important partner. Municipality contributes to the costs of site care. We have been striving for a suitable interpretation of this NNM for a long time, and the data show that it makes sense due to high traffic.

The counters in the Velký and Malý Blaník Nature Reserves (lookout tower, nature trail, forest as a subject of protection) also showed a significant increase in visitor use in recent years (Covid-19). The data is used for **negotiations with municipalities and forest owners** and is an important argument in negotiations on the nature trail, the operation of the lookout tower (pressures on electrification) and the opening of the peak for cyclists. We use the data when negotiating a "no-intervention" regime in parts of the nature reserve.

Due to the newly created climbing routes in Kobyla Nature Reserve (NR), the data show **a change in the visitor use in the area**. Awareness of the distribution of visitors during the day is valuable. With the help of data, it is possible to further correct visitor use and successfully **negotiate with representatives of the Czech Mountaineering Union**. The same applies to Tetínské skály NR, popular not only for climbers but also promoted by the municipality.

The counter by Kubrychtova bouda in Karlštejn NNR exceeds the original ideas about the number of people passing by. The data **confirm the idea to repair the chalet and set up an information point** here. Awareness of the distribution of visitors during the day, week and year for opening hours planning is valuable. Similarly, the famous viewpoint above Svatý Jan pod Skalou is confirmed by visitor monitoring as one of the most visited places in the Bohemian Karst PLA. The data will be used in a **sustainable tourism study**.

Visitor monitoring in selected caves in the Moravian Karst PLA shows higher values than expected. These findings will be the reason for **adjusting the regime** in cooperation with speleological organizations.

Thanks to counters on rivers used for canoeing (eg at the Ploučnice river in the Kokořínsko - Máchův kraj PLA or at the Morava river in the Litovelské Pomoraví PLA) we know not only **when the canoeing season begins and ends**, but also very precisely when the first eager people appear on the water and when the last boat really passed in a given year. We can, for example, check whether the destruction of clutches of eggs on the gravel alluvium have been caused by canoers or fishermen and take the right measures.

Long-term visitor monitoring on the trails in Králický Sněžník NNR not only shows us general trends, but also allows us to **identify the impacts of the construction of various visitor attractions** in Horní Morava village on visitor use. In the same way, we have documented the effects of the construction of the lookout tower on the Polish side of the peak, not only during the construction works, but also in the future after the start of regular operation. The **results can be used far beyond the borders** of the region, whose administration monitors traffic.

Discussion

The above list of visitor use data usefulness is just an example. Experience shows that visitor monitoring data can be very useful in many situations to answer current questions. On the contrary, for example, we do not have precise figures based on the rangers' claims about a dramatic increase in the number of visitors to suburban PLAs during antipandemic measures, because in 2020 no monitoring was run in the Czech Karst or the Moravian Karst or Poodří PLAs.

Automated counters are just one of the visitor monitoring methods. Much more accurate information on visitor use of a protected area could be obtained by a combination with other methods like mobile

phone signal providers data and visitor surveys. Unfortunately, state budget is limited and other partners show some attitude to support visitor monitoring very rarely.

Conclusion

This article claims to inspire as much organisations as possible to start with visitor monitoring in their areas of interest. NCA offers visitor monitoring data exchange to collaborate in sustainable visitor management based on reliable information.

Souhrn

Od roku 2009 sbírá AOPK ČR údaje o návštěvnosti vybraných lokalit ve své správě metodou automatických sčítačů. Sledují se jak nejzatíženější cesty, tak cesty u zranitelných cílů, uzavřené pěšiny v NPR, vrcholové cesty s občasným automobilovým provozem na zvláštní povolení, cyklostezky i vodácké trasy. V posledních cca pěti letech jde většinou o 50-100 současně sledovaných profilů. Zakázky na nákup dat a jejich základní vyhodnocení se soutěží formou rámcové dohody, máme dva tradiční dodavatele. Od roku 2018 oba dodavatelé nahrávají veškerá sebraná data do centrální internetové databáze Eco-Visio, která velmi usnadňuje sdílení dat a zároveň umožňuje vlastní základní analýzy.

Získané údaje podávají přehled nejen o celkové návštěvnosti lokalit. Z dat jsou zřejmé i oscilace v průběhu roku, týdne i dne (po hodinách). Na dlouhodobě sledovaných profilech je možné objektivně identifikovat trendy. Z dat jsou dobře patrné i výkyvy návštěvnosti, ať už jde o jednodenní hromadné akce nebo střednědobé vlivy např. u protipandemických opatření. Výsledky monitoringu jsou využívány pro plánování návštěvnické infrastruktury, služeb stráže přírody, povolování různých záměrů i projednávání strategií práce s návštěvníky. Zejména při diskuzích se starosty jsou údaje ze sčítačů důležitým podkladem, protože se v praxi ukazuje, že vnímání návštěvnosti je velmi subjektivní a na základě vlastních pocitů každá strana hodnotí situaci velmi odlišně.

Monitoring návštěvnosti pomocí automatických sčítačů je jen jednou z dostupných metod. Ideální je kombinace dat různých metod, například také zbytkových dat mobilních operátorů nebo dotazníkových šetření.

Cílem příspěvku je inspirovat další partnery k monitoringu návštěvnosti. AOPK ČR je jako státní organizace zcela závislá na možnostech státního rozpočtu. Vícezdrojové financování a vzájemné sdílení dat by umožnilo efektivní spolupráci na udržitelném managementu cestovního ruchu nejen v chráněných územích.

Contact

Mgr. Ondřej Vítek, Ph.D.

E-mail: ondrej.vitek@nature.cz

Open Access. This article is licensed under the terms of the Creative Commons Attribution 4.0 International License, CC-BY 4.0 (<https://creativecommons.org/licenses/by/4.0/>)

