

Simultaneous use of several monitoring techniques to measure visitor load, spatio-temporal distribution and social characteristics of tourists – a case study of a cable car area in the Carpathian Mountains, Tatra National Park

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Visitor monitoring is an integrate part of the effective management of recreational and protected areas. Comprehensive information concerning volume of tourist traffic, spatial-temporal distribution of visitors in a leisure setting as well as visitor socio-demographic characteristics may support understanding human behaviour and the ongoing natural processes (trail deterioration, erosion, impact on flora and fauna). Especially, vulnerable areas that in the same time serve as tourist attractions need to be carefully investigated. One of such areas is Kasprowy Wierch (1987 m.a.s.l.) – a popular cable car destination located in the Carpathian Mountains, Tatra National Park, Poland / Slovakia.

The aim of this study was to define the overall visitor load and to understand visitor behaviour in the proximity of the upper cable car station at Kasprowy Wierch. The main focus of this presentation is the comparison of the used monitoring techniques and exposing the benefit of their simultaneous application.

Visitor monitoring campaign was carried out in the study area in the summer season 2014. The following data collection techniques were simultaneously applied: 1) automatic counting (Eco-Counter pyroelectric sensors), 2) manual counting; 3) on-site interviews combined with trip diaries and visitor observation 4) GPS-tracking 5) registry of cable car tickets 6) registry of entries to the national park (TPN).

Between 26.06.2014 and 30.09.2014 at 7 locations a continuous automatic counting of visitors was done using pyroelectric sensors (Eco-Counter). Additionally, on 18 sampling days at 12 locations direct observations (manual counting) of visitor flows was carried out. During the sampling days tourists were interviewed in the field using structured questionnaires (PAPI survey technique, N = 2639). Survey was combined with a documentation of visitors' trip itineraries via GPS-loggers and map sketches. Totally 1250 GPS-tracks of visitors and 1351 map sketches have been collected.

Between July and September 2014 a total number of 292 493 visitors moving towards Kasprowy Wierch (KW) were registered in the cable car and on recreational trails leading to KW. 80% of people used cable car, whereas 20% were using hiking trails to get to the summit and back. Cable car users with return tickets were the most numerous tourist group in the Kasprowy Wierch area. Between July and September 2014 the share of specific ticket types among cable car users was as follows: return tickets „up & down” = 59%, on-way tickets „up” = 26%, on-way tickets „down” = 15%. In the summer season 2014 on average 3179 visitors per day arrived to KW area. The maximum tourist traffic was observed in August 2014 where daily number of visitors exceeded 7000. Two most intensively used path segments were located next to the upper cable car station (cable car station – Sucha Pass; cable car station – meteorological station/summit of KW). Third most heavily used path segment was located between Sucha Pass and the summit of Beskid. Visitor load at path segments located next to the cable car station was on average 5-10 times higher than the visitor load at other hiking trails in the area (e.g. trail linking Kasprowy Wierch and Czerwone Wierchy or Liliowe Pass and Świnica).

Each monitoring technique allows gaining different type of information. Simultaneous use of several data collection methods has an additional added value when trying to understand tourist behaviour in the studied area.

The results can be used as a basis for further investigation concerning environmental and social impacts in the Kasprowy Wierch area and may assist management of the Tatra National Park.