First Experience with Automated Counting System in the Krkonoše Mts. National Park

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The Krkonoše Mts. (Giant Mts.) are situated on the north border of the Czech Republic. Even the mountains are not too high (the highest top called Sněžka Mt. isonly 1603 m a. s. l.) the locality forms a first barrier in the south and eastdirectionfrom sea for the prevailing winds.The climate there is therefore very oceanic, characterizedby humid and foggy weather,rich in precipitations. In the winter is the surface of protuberant objects in upper parts is often covered by thick layer of ice because of the humid winds.We have started counting with automated counters at 27 localities since the year 2012. 22 of themhas been situated at the entrances of the most protected area of the national park (the first zone), which is predominantly situated in the upper part of mountains, close or above the tree line.The movement of visitors is regulated there becausethese parts are higly visited. 4 of these counting point has been also combined for counting of cyclists or motor vehicles. Last 4 localitieshas been placed in less protected parts of the national park –3 for motor vehicles, and 1 forcyclists. The used technology is the pyro sensors for counting of passing pedestrians, ZELT Greenways for cyclists and Car/Bus MULTI system – all from the Eco-counter company (http://eco-compteur.com/en/). Due to local climatic conditions (described above) most of the counters do not work in the winter (from Nowember to May), because they are hidden under the snow layer, or in winters with less snow run just for certain days. For that reason our partner ensuring the technical support(Nadace Partnerstvíhttp://www.nadacepartnerstvi.cz/), placed telescopic columms on four counting points, because the locality also is highly visited in winter for cross country skiing and ski touring. But those counters arealso running occasionally, because of often ice layer growindfrom humid winds.This ice must be than repeateddly mechanically remowed. Other "small" complication comes from the width of local trails which allows two or three people walking besides. We decided not to use counting slabs because we cannot exclude the occasional transit of heavy vehicles – they are used for transport of hurt visitors by mountain rescue service, and some of themare used as the only access for the touristic chalets. Therefore,in our data analysis, we have to count with these limits and imperfections of the system.

The first results show some constant trends: in the part of the year without snow has been the most visited month August, next July; the least visited month November and April. The highest numbers of passing visitors (pedestrian and cyclists)in total were marked on trails to the Sněžka Mt., the spring of river Labe, the Luční bouda Chalet, the Obří důl Valley and the Jelenka Chalet, which are very favorite and tradi-

Figure 1. *The telescopic pedestrian counter, the end of winter*

tional touristic destinationsin longerview. They are located close to the state border andthey are also often visited by Polish tourists (unfortunately we do not have data from Poland).The numbers of transitsin favorite places take more than 10 000 per months, in less favorite places from several hundreds to thousands. The most visited days withinweek are Saturday and Sunday. Tourists are also distributed during the day, the most amount of people is passing counting area from 11 a. m. to 4 p. m. Some of counting points show also certain connections to the schedule of cableways. The monitoring of motor vehicle transit is used as the control against abuse of the allowed entrance. We can say, that traffic in some places is quite high and will require future actions from the Park Administration.

From longer view we can say, that the behavior of tourists has been very stable – on one side is this fact closely connected with the starting points of accommodation and on other side are these destinations so famous and unique that there is no reason for changing preferences in coming days.In this abstract we would also like to point out the technical problems and limits with automated counting for similar area to the Krkonoše Mts.