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COMPARISON OF ATTRACTIVENESS OF TOURIST SITES FOR ECOTOURISM AND MASS TOURISM: THE CASE OF WATERS IN MOUNTAINOUS PROTECTED AREAS

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Evaluation of tourist attractions by different segments on 'mass-tourism' – 'eco-tourism' continuum for water-enhanced tourist sites in mountain and submontane areas in South Bohemia (Czech Republic) was tested. Students on three different study programmes were chosen as respondents for Q-sort with photos of 48 tourist sites. Principal components factor analysis of respondents sorting revealed three main factors of attractiveness perception: presence of dominant attractiveness, natural landscape versus cultural-historical site, harmony of landscape. Impact of tourist segments was revealed for the first two factors. Hierarchical clustering of cluster analysis was then used to obtain homogenous groups of photos. Nine types were revealed: (a) wetlands; (b) forest springs; (c) historical monuments rather of a marginal character; (d) perspective horizons of various content; (e) technical treatments; (f) historical dominants; (g) waterfalls; (h) alpine (wild) rivers; (i) harmonic landscape. Impact of tourist segments was revealed for clusters (a), (c), (e), (f), and (i).

Keywords: *attractiveness, tourism, perception, Q-sort, Czech Republic*

JEL Classification: *L83, M1, O1*

INTRODUCTION

Tourism destinations are visited by visitors due to various motives (Bansal and Eiselt, 2004). They also differ in perception of the environment (Navrátil et al., 2011) and behave, thereafter, in the visited environment in a variety of ways (Horner and Swarbooke, 1996). Destinations of many tourists in urbanized areas are various types of protected areas (Bushell et al. 2007). Values, because of which those areas are protected, act, however, also as tourist attractions (Ritchie and Crouch, 2003). Consequently, it means that management of such environments must meet two contradictory requirements: to contribute to the limiting human impact on these environments and to make them accessible for tourists (Marion and Reid, 2007), which is an issue for both tourism management and nature/heritage conservation management (for detailed review please see Navrátil et al., 2011: 7-9). A detailed knowledge of the structure of tourists' relations to the partial elements of the mountain landscape enable sustainable management as it is advantageous for the landscape, nature, culture and tourism (Geneletti and Dawa, 2009).

Hence, we have chosen as the aim of this paper, identification of the specifics in evaluation of tourist attractions by different segments of visitors sharing the same environment. At the same time we suggest first two hypotheses:

H1: type of participation in tourism affects the perception of environment attractiveness.

H2: type of participation in tourism affects the perception of partial components of an environment.

Perception of environment and, thus, also the attractiveness of the target place is one of the factors of forming an image of a destination (Naoi et al., 2006), which is "formed through the consumer's rational and emotional interpretation" (Royo-Vela, 2009: 420). It manifests itself analogically through the evaluation in 'wants' which are a 'manifestation of need' (Naoi et al., 2006). They affect, also, the motivation to visit (Goosens, 2000).

In the study of perception of environment, a higher number of paradigms are accepted (Taylor et al., 1987; Uzzell, 1991). However, the

most relevant approaches in tourism are the following – psychophysical and cognitive (Fyhri et al., 2009).

Research within the cognitive paradigm was focused first on the finding out of the structure of elements participating in the evaluation of the environment, especially utilizing the information rate measure developed by Mehrabian and Russell (1974). In perception, novelty plays an important role and that in the cross-fade of two elements: preference-for-prototypes and preference-for-differences (Peron et al., 1998). Among other most common goals of studying perception of environment we find identification of factors of perceived aesthetical values (e.g. Real et al., 2000). Generally, considered to be more interesting or more beautiful are those places with attendance in natural or close-to-nature landscape elements (e.g. Fyhri et al., 2009), as well as the picturesque scenes with landmarks of any type, and the harmony between natural and cultural substances of environment (Gabr, 2004).

Thus our next two hypotheses are:

H3: There are several dimensions in the evaluation of an environment.

H4: Attractions could be grouped on the basis of evaluation.

MATERIAL AND METHODS

Study area and investigated types of sites

The degree of attractiveness was assessed within the area comprising Šumava Mountains, Novohradské Mountains, Šumava foothills, Novohradské foothills and Třeboň Basin, having in terms of climate and landscape an expressively submontane character. It is of the matter of typical highland of the temperate climate zone situated in the southern part of the Czech Republic along the border with Germany and Austria. Located at approximately 48°33′–49°17′N, 13°04′–14°58′E, the total surface of the studied area is 6317.6 sq km and there are 10 large-area-protected territories representing approx. 50% of the study area.

Based on the previous experience of the authors and an extensive field survey, several types of water-enhanced tourist attractions were identified: mountain glacier lakes, springs, water-falls, alpine stony rivers in deep valleys, rivers in flat broad mountain valleys, canals, ponds, peat bogs, water closely linked with an historical monument, high situated point with a view on a water-course in deep timbered valleys, points with a wide view on a dominant water level and dams.

Research approach

The psychophysical paradigm was chosen in order to achieve the defined aims (Taylor et al., 1987) because "in this approach landscape is conceived as a stimulus which provokes a reaction in the subject, thus following a strong behaviorist perspective" (Real et al., 2000: 356). We decided to use the Q-sort questionnaire design as people find doing Q sorts interesting (Eden et al., 2005).

"What Q methodology attempts to elicit are the variety of accounts or discourses about or around a particular discourse domain, theme, issue or topic" (Barry and Proops, 1999: 399). In Q-method participants rank order a set of items under a specified condition of performance (Cruz et al., 2007) and one of the main strength of the Q-method is that it provides statistically significant results from a relatively small sample size (Doody et al., 2009). For detailed description of Q-method plea see e.g. Barry and Proops (1999) or Steelman and Maguire (1999).

The sorting of photographs was chosen as it is one of the basic tools of how to study perception of environment (Fairweather and Swaffield, 2001). Photographs serve to act as a stimulus for the respondent (Naoi et al., 2006). Q-sort methodology "appears to be as reliable and valid measure of visual quality as most other psychometric methods" (Pitt and Zube, 1979: 233) and was used previously in mountain research of preferences (Cruz et al., 2007), water surfaces preferences (Gabr, 2004), and tourist preferences (Fairweather and Swaffield, 2001).

48 photos of revealed types of tourism attractions from different places were exploited as representatives of tourism attractions and used as objects to sort. Respondents were asked to sort the photographs according to their perception of interestingness for a visit. The most common 9 pile system was adopted (Barry and Proops, 1999). Here +4 corresponded to 'The site on the picture is, for me, extremely interesting to visit.' and -4 to 'The site on the picture is, for me, definitely not interesting to visit.' The near-normal distribution for numbers of photographs in each column was used (1-2-5-9-14-9-5-2-1).

Selection of respondents

The first tested type of tourist are the potential contributors to the sustainable development of tourism in the naturally valuable areas (Epler Wood, 2002) – undermentioned as 'eco-tourists'. The second tested type are tourists representing the basis of the visit rate and are the highest potential threat for such areas (Williams, 1998), undermentioned as

'mass-tourists'. The cited types represent the poles of customer continuum (Horner and Swarbrooke, 1996). We have, therefore, found for research one more group, which should be situated within the results in between the poles, undermentioned as 'neutral tourists'.

It is usual in analogical tests that students are exploited for the research – see e.g. analysis of Palmer and Hofmann (2001) – which is also the case for tourism (Chhetri et al., 2004; Navrátil et al., 2011). The correspondence of answers between students and other groups has been proven many times (Palmer, 2000). So we have chosen university students for our research: (1) students of business studies representing 'mass-tourists', (2) students of ecology representing 'eco-tourists' and (3) students of agriculture representing as 'neutral tourists'. The research was done at three universities in the Czech Republic. With regard to the different numbers of students in the groups of particular study programmes, it was impossible to achieve numerously identical groups of students. For 'mass tourist' model 108 respondents were asked (in two groups: 55+53) and 77 responded, for 'neutral tourists' model 91 were asked (in two groups: 41+50) and 71 responded, for 'eco-tourists' model 47 were asked (in two groups 25+22) and 37 responded.

To verify validity of model segments, the behaviourist segmentation criteria were employed (Goeldner and Ritchie, 2009) – environment protection in the lifestyle and typical recreation activities exercised when travelling. The tool for measuring the environmental awareness was based on the results presented by Ballantyne et al. (2008) asking respondents to rate how closely a list of attitudes and practices described them on a five-point scale ranging from 1 (does not describe me at all) to 5 (describes me perfectly). The tool for measuring participation on recreation activities was assumed from Navrátil et al. (2010). The implication in recreational tourism activities was measured on five point Likert-type scales where 1 = not participate, 5 = participate first of all.

Reliability and validity

Chosen for the test of reliability was: (1) the method of two separate measurements for each model segment, (2) the average correlation between those two groups within each model segment (Palmer and Hofmann, 2001), and (3) a test of average difference between those two groups using One way ANOVA with the Tukey unequal N HSD test for each photograph. Evidence of previous studies suggests that "respondents correctly interpret photographs presented to them as indicators of the

'real' landscape, and make their evaluation on that basis" (Fairweather and Swaffield, 2001: 220). Our research is focused only on the perceived degree of interestingness of partial tourist attractions (as in Fyhri et al., 2009 or Gabr, 2004). It was, thus, not necessary to realize a field survey. To obtain valid outcomes, selection of photos follows the methodology of (Green, 2005) and the selection of each photo was discussed with experts in landscape protection, landscape ecology and tourism planning (Gabr, 2004).

Questionnaire and data collection

The questionnaire was prepared electronically and accessible to respondents for 30 days during November 2009 on the web page of the workplace of the first author. Respondents were first called to look through the photographs. Only after the look-through were the respondents directed to the address of that part of the questionnaire with the Q-sort. For the Q-sort the code WebQ was appropriated (Schmolck, 1999) with the photographs sized approximately to 160 x 120 px. After its filling, another part with the scales of the behaviorist segmentation was opened to the respondents.

Data analysis

Differences in behaviourist segmentation among the model segments were investigated by One-way ANOVA and results were tested using the Tukey unequal N HSD test (Quinn and Keough, 2002).

The Q-sort data were analyzed using PQMethod 2.11 software using principal components factor analysis and selection of factor-defining sorts was based on pure cases only (Schmolck, 2002). In order to define important 'dimensions' the break in scree diagram was used, where eigenvalues for each components are plotted against the component number (Quinn and Keough, 2002).

The impact of the membership of a respondent in a model segment on the factors found was assessed based on the regression analysis (Robinson, 1998) of the dependence of the factor loads on the model segment of the respondent.

Components in assessment should be traceable in the structure of the analogically assessed attractions (Gabr, 2004). Cluster analysis is the most common technique used to produce homogeneous groups based on preferential judgments of Q-sort (Real et al., 2000; Gabr, 2004; Naoi et al., 2006; Fyhri et al., 2009). To create the homogenous groups, the usual

method of hierarchical clustering was employed with use of the complete linkage method of clustering (Robinson, 1998). The linkage distance of 50 % was chosen in order to rule the appropriate number of clusters (Real et al., 2000). The characteristic of the homogenous group was calculated as an average of answers to a group of photographs of a cluster. The differences in preferences for homogenous groups defined by the cluster analysis among model tourism segments were investigated by One-way ANOVA and results were tested using the Tukey unequal N HSD test (Quinn and Keough, 2002).

RESULTS AND DISCUSSION

Sample

Use of the groups of students as representatives of particular model segments is justified, as there were found high and significant correlations of the average imputed values of interestingness of particular photographs between two groups of students within a model segment (Table 1). This result is also promoted by the unproof of the differences for particular locations among groups with the model segments - Tukey HSD for unequal N test reveals only one difference on the significance level $p < 0.01$ in case of the model segment 'eco-tourists'.

Table 1 Pearson's correlation coefficients and significance of correlation of average imputed values of interestingness of particular photographs between two groups of students within a model segments.

	correlation coefficient	significance level
mass-tourists	0.924	< 0.001
neutral tourists	0.888	< 0.001
eco-tourists	0.851	< 0.001

Conversely, there were proven differences among segments based on the relationship to the activities of the environmentally friendly lifestyle and exercise of recreational activities when travelling. 'Eco-tourists' dedicate more time to volunteer work for institutions taking care of the environment and to the active searching for information on environment protection than mass-tourists (Table 2). Also, they observe nature more

often when travelling (Table 3). In most cases, the average answers on activities of 'neutral tourists' is located between the average answers of the 'mass-tourists' and 'eco-tourists' (Table 2 and Table 3).

Table 2 Mean values (± standard error, S.E.) of environmental awareness for model segments. Means with the same letter do not differ significantly (Tukey HSD for unequal N test, p > 0.05; N of 'mass tourists' = 77; N of 'neutral tourists' = 71; N of 'eco-tourists' = 37).

	mass-tourists		neutral tourists		eco-tourists	
	mean	S.E.	mean	S.E.	mean	S.E.
I use environmentally friendly products.	3.86 a	0.102	3.93 a	0.105	4.19 a	0.128
I actively search for information about environmental conservation	2.58 a	0.120	3.88 b	0.134	3.78 b	0.165
I do volunteer work for groups who help the environment.	1.49 a	0.097	2.31 b	0.149	2.24 b	0.199
I recycle at home.	4.53 a	0.092	4.42 a	0.100	4.49 a	0.143

Note to table: The measurement scale range from 1 (does not describe me at all) to 5 (describes me perfectly).

Table 3 Mean values (± standard error, S.E.) of participation on recreational activities for model segments. Means with the same letter do not differ significantly (Tukey HSD for unequal N test, p > 0.05; N of 'mass tourists' = 77; N of 'neutral tourists' = 71; N of 'eco-tourists' = 37).

	mass-tourists		neutral tourists		eco-tourists	
	mean	S.E.	mean	S.E.	mean	S.E.
wellness or bath	2.13 a	0.107	1.47 b	0.084	1.19 b	0.065
sightseeing (castle, chateau, etc.)	3.05 a	0.118	3.21 a	0.095	2.62 a	0.131
visiting museums, art gallery, festivals, etc.	2.83 a	0.119	2.78 a	0.097	2.65 a	0.151
shopping	3.34 a	0.099	2.82 b	0.129	2.43 b	0.158
to enjoy myself	3.69 a	0.102	3.11 b	0.115	2.73 b	0.204
resting	3.79 a	0.097	3.72 ab	0.107	3.27 b	0.176
wildlife watching	3.43 a	0.100	4.11 b	0.094	4.24 b	0.131
recreational cycling	2.92 a	0.138	2.96 a	0.139	2.49 a	0.184

recreational sport activities	3.61	a	0.103	3.49	ab	0.105	3.03	b	0.167
walking	3.22	a	0.122	3.92	b	0.126	3.46	ab	0.214

Note to table: The measurement scale range from 1 (not participate) to 5 (participate first of all).

Factors of evaluation of the measure of an attractions' interestingness

Hypothesis 3 was confirmed as the factor analysis identified three important factors (Table 4).

The "natural" scenes of water without an explicit manifestation of an intensive human interventions (waterfalls, glacier lake with a rock basin, ponds), were perceived as interesting to visit, and were separated along first factor (items with value at least ±2) from the photographs with an important human intervention or his physical presence (dam, waterman's camp, ameliorated watercourse, tourists on the pound lock), perceived as least interesting to visit. When assessing on this level it could appear that the first factor is the usual factor 'natural' – 'human-influenced' environment, which is the most often reported dimension in perception of environment (Kent and Elliot, 1995; Real et al., 2000), as well as in perception of environment directly linked with water (Gabr 2004). Here it is not fully the case, because on the level of the weakest expression of the perception of interestingness to visit (± 1), historical monuments stand on the side of interesting sites to visit and numerous wetlands on the side of non-interesting sites. This difference is analogical to findings of Naoi et al. (2006). The group of interesting places is characterized by the existence of a dominant standing as a by-respondents-identified tourist attraction (Ritchie and Crouch, 2003) and photographs have a 'postcard' character (Fairweather and Swaffield, 2001; Gabr, 2004). Decision making on the interestingness is, thus, given by the existence of an attraction, whereas the most important attraction in the mountain and submontane environment is the 'naturally-attractive environment'. Reversely, the decision making on the non-interestingness of an environment is given by the presence of visitors (Hunter, 2008) and a high degree of technical adaptations (Kent and Elliot, 1995). It is thus of matter, in view of the need for the structuring of premises for tourism development (Alhemoud and Armstrong, 1996) in that an area could dispose of its various premises in order to develop its tourism. The impact of membership of a respondent in a model segment was confirmed by the regression analysis. However, it is very weak ($R = 0.30$, Adjusted squared R 0.08, $p < 0.001$).

Table 4 Number of photos with scores on each of the three extracted Q-sort factors.

Nr. of photo	Factor 1	Factor 2	Factor 3	Nr. of photo	Factor 1	Factor 2	Factor 3
01	0	-3	0	25	-3	2	1
02	-1	-1	0	26	0	-1	-4
03	0	-1	-2	27	-1	0	-2
04	-1	-4	0	28	0	3	-1
05	1	3	0	29	2	-1	3
06	4	1	1	30	1	0	1
07	-1	-2	1	31	-1	0	-1
08	0	-2	0	32	-3	1	-1
09	2	1	-2	33	-1	2	0
10	-1	1	2	34	-2	1	-2
11	0	-2	1	35	1	-1	1
12	-2	0	0	36	1	0	1
13	2	0	-1	37	-4	1	-3
14	2	1	-1	38	0	-2	0
15	1	0	2	39	-2	1	-1
16	-1	-3	-1	40	-2	1	0
17	1	-1	3	41	-1	2	0
18	3	2	0	42	-2	2	0
19	3	0	1	43	1	4	4
20	0	0	-3	44	0	0	1
21	0	-1	-1	45	0	-1	2
22	2	-1	-1	46	0	0	-2
23	1	0	2	47	0	0	2
24	1	0	0	48	0	-2	0

Note to table: Number of photo corresponds to number of photo in Figure 1.

Factor 2 respondents most strongly identified with cultural-historical monuments. The eight top-ranked photographs show a variety of historical attractions all across the study area, except the waterman's camp (it is presumed that it was identified by most respondents because it is the most important waterman's camp along headwaters of Vltava, situated under a historical monument of all-European importance – the gothic monastery Zlatá koruna). All eight bottom-ranked photographs for factor 2 show peat bogs of mountains, foothills as well as the Třeboň

Basin and the mountain plain, hence the places of a proper 'naturalness'. Factor 2 could, thus, be indicated as a factor of cultural-historical prerequisites of tourism (Alhemoud and Armstrong, 1996).

Regression analysis confirmed that an important impact on this factor is performed by a concrete type of tourist, which explains 1/3 of variability ($R = 0.57$, Adjusted squared $R = 0.32$, $p < 0.001$). This result supports the hypothesis 1, because different segments explicitly prefer different parts of 'natural' and cultural elements in the destination. Natural attractions are not present here, contrary to the factor 1, in terms of 'tourist attractions' but in terms of scientifically/landscape interesting (or valuable) areas.

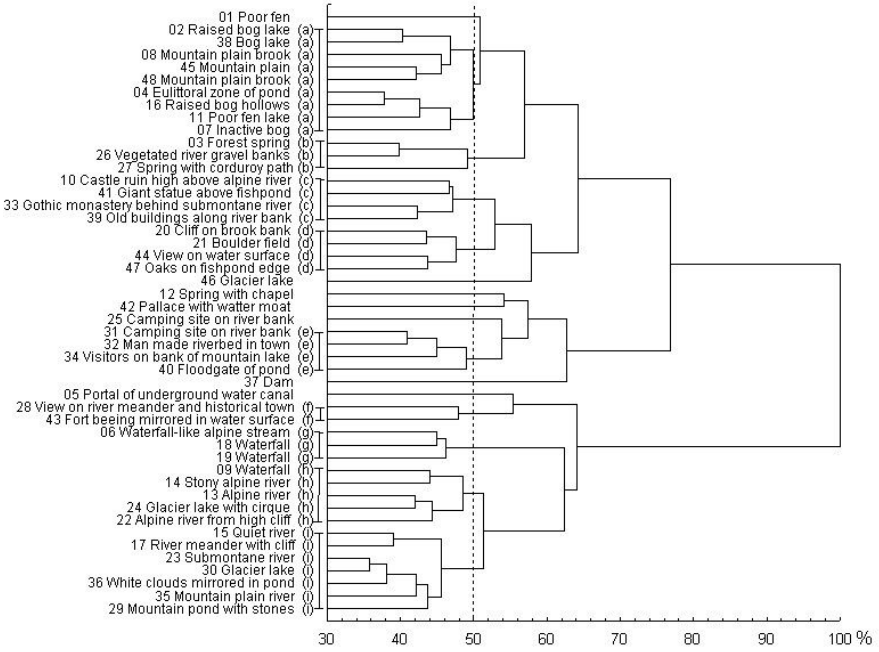
The eight top-ranked photographs for factor 3 show backlit scenes with brightly vanishing lines and freshly green riparian vegetation attended by blue sky with white clouds reflected by water-level. The eight bottom-ranked photographs show pictures of sites with variously disharmonic created landscape scenes, which is disturbed by e.g. unsymmetrical and by-dead-spruces-attended wall of the mountain glacier lake rock basin, by unsymmetrical falling wall of granite massif or by size of boulders in the by-spruce-closed through view of a mountain river. Factor 3 could thus be identified with the harmony of the creating of coastal landscapes, because elements, based on which the groups were differentiated one from the others, are analogical to findings of Gabr (2004). No impact of the model segment on this factor was proved.

Perceived types

Cluster analysis distributed the sites in 9 types (Figure 1): (a) wetlands comprising mountain raised bogs, mountain poor fens, poor fens of the Třeboň Basin, eulittoral zone of pond and secondary mountain meadows in the mountain plains; (b) forest springs including analogically looking braided stream with surrounding woodland; (c) historical monuments of a rather marginal character; (d) perspective horizons of various content; (e) technical treatments; (f) historical dominants; (g) waterfalls; (h) alpine (wild) rivers; (i) harmonic landscape dominated by blue sky and lively greening growths. The hypothesis 2 was thus confirmed. In the dendogram the existence of two groups of attractions is notable. The first groups comprise clusters (a) – (e) and the second one (f) – (i). It is, thus, evident, that on the basic level, the clusters separated analogically to the distribution of photographs based on the first factor of factor analysis. Within the group of clusters (a) – (e) the main scale principle is the degree of human intervention in the water environment –

from 'natural' sites through cultural-historical sites up to the dominance of techniques. In case of the second group of clusters (f) – (i), this impact is also evident, but the outstanding impact is that of harmony.

Figure 1 Dendogram solution from cluster analysis. Letters in brackets after description of photo indicate the 9 selected clusters. The dashed vertical line indicates the lower limit of the similarity criteria employed (0.50).



At five defined groups of attraction was found a different perception of degree of interestingness between 'mass-tourists' and 'eco-tourists' ($p < 0.05$; Table 5). Also H4 was thus confirmed. This difference is most striking at wetlands, which are a strongly natural element in the mountain and submontane landscape of South Bohemia. For this type of attraction all three model segments are significantly separated – only for 'eco-tourists' are the wetlands an attractive type of tourist destination. A contrary difference was noted for cluster (c) – historical monuments of rather marginal character are perceived as interesting for visit only by 'mass-tourists'. Also sites within cluster (e), technical treatments of

watercourses, are perceived as more attractive by mass tourists, but, even for them, such places are not perceived as interesting to visit. Per contra historical dominants are perceived as interesting to visit for all three clusters, although more significantly so for mass tourists. Harmonic landscapes of the cluster (i) are, likewise, perceived by all model segments as interesting to visit.

Table 5 Mean values (± standard error, S.E.) of average attractiveness of clusters (see Figure 1) for model segments. Means with the same letter do not differ significantly (Tukey HSD for unequal N test, p > 0.05; N of 'mass tourists' = 77; N of 'neutral tourists' = 71; N of 'eco-tourists' = 37).

	mass-tourists		neutral tourists		eco-tourists	
	mean	S.E.	mean	S.E.	mean	S.E.
cluster a	-0.905 c	0.077	-0.245 b	0.091	0.207 a	0.145
cluster b	-0.437 a	0.099	-0.338 a	0.112	-0.207 a	0.145
cluster c	0.312 a	0.095	-0.344 b	0.084	-0.527 b	0.130
cluster d	-0.039 a	0.078	-0.069 a	0.080	-0.041 a	0.135
cluster e	-0.347 a	0.103	-1.021 b	0.113	-1.358 b	0.142
cluster f	1.429 a	0.144	0.424 b	0.151	0.162 b	0.221
cluster g	1.351 a	0.129	1.690 a	0.118	1.450 a	0.193
cluster h	0.470 a	0.082	0.686 a	0.079	0.595 a	0.113
cluster i	0.160 b	0.070	0.754 a	0.080	0.568 a	0.087

CONCLUSIONS

Different segments visit identical sites but, once there, prefer a different proportion of natural and cultural elements. Management of tourist attractions should meet conditions of sustainable visit rate, i.e. it should promote visits by people who are: informed, conscious of the importance of conservation of a good-class environment and demonstrably respecting of the environment. Promoting of such measures (focused particularly on enlargement of 'wild') is, however, counter to the perception of interestingness by the majority of visitors – in other words these measures decrease satisfaction for these visitors, which could lead to the decrease of visit rate or increase of anti-protection moods resulting in the unfriendly position of tourism activities and actions protecting mountain environment. This state becomes a political topic, particularly in the areas which were once so importantly touristic and so protection

demanding, which the studied area surely is. The organized nature protection is under a permanent pressure of the need for efforts to make accessible new attractive 'natural' areas. It seems to be impossible for the protection of the environment to resist this pressure supported by economic goals of the tourism development. As we have to envisage the future increase of mass tourists and simultaneously we are interested in the conservation of natural heritage and maintenance of a favorable environment in which to live, it is probably vital to seek for a compromise solution. A possible way could be the dissemination of the ideas of sustainable travel and tourism and promotion of journeys to the 'natural' environment. Further research should be dedicated to searching for compromises and also ways of how to change tourists' behavior, 'wants', and perceptions.

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