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Management and environmental education in Veľká Fatra National Park (comparison with other parks of Visegrád Group)

Introduction

With regard to nature protection, effort is currently being made to promote four basic trends. The first trend is the development of the biological aspects of nature protection through a better knowledge of species and their relationships in the ecological complex in which they are generated. The second trend is the development of philosophical and ideological aspects of nature protection through new ecological ethics, which explores human relationship to the entire nonhuman world, to Earth; from the moral point of view ecological ethics are considered a historical necessity at that stage and development (Keller, 2005; Kohák, 2006). The third trend is to strengthen environmental legislative instruments, including the ones in relation to ensuring better information of the population and also building an open democratic society. The fourth trend is practical and it deals with caring for ecosystems through active procedures related to maintenance, guidance, improvement or restoration of a favorable conservation status of habitats (Vološčuk, 2005; Kopcová, Tuhárska, 2006; Sabo et al., 2011). From the above mentioned, the main area of concern is the practical conservation of nature and paying special attention to the Protected Area (PA). Protection methods are based and rely on exact and empirical experience and knowledge. The aim of nature protection is to achieve biodiversity conservation and promotion of ecological stability in ecosystems with the acceptance of social and economic aspects as part of human society.

The main aim of the study is to evaluate the management of Veľká Fatra National Park, and its comparison with the selected three analogous National Parks (NP) in the countries of the Visegrád Four, as well as to evaluate environmental consciousness and environmental edification of students of grammar schools and secondary schools, not only within the region where NP is located, but also outside it. The study also aims to

evaluate the gained information about the condition of environmental consciousness and edification in NPs in individual countries, their reciprocal evaluation and comparison with Velká Fatra NP.

Based on the main objective the following partial aims were developed: 1 – to characterise the conditions of Velká Fatra NP and its current condition with regard to ecological, economic and social impact affecting its development; 2 – to evaluate and compare the management of Velká Fatra NP and analogous NPs in Visegrád Four through the expert system IPAM; 3 – to undertake a survey of environmental consciousness of students of grammar and secondary schools in the region Velká Fatra NP and outside that region, and to compare their evaluation with the environmental consciousness of students of grammar and secondary schools in the selected analogous NPs of the Visegrád Four; 4 – to propose steps and procedures for strengthening and streamlining environmental education of Velká Fatra NP; 5 – to propose changes that are needed for the improvement and streamlining of the management of Velká Fatra NP from the point of view of its sustainable development.

Materials and methods

Investigated area

The research was focused on four NP's of Visegrád Four: Velká Fatra NP 48°59' N, 19°05' E (Slovakia), Bohemian Switzerland NP 50°53' N, 14°23'22" E (Czech Republic), Bieszczady NP 49°06' N, 22°39' E (Poland) and Bükk NP 48°02' N, 20°31' E (Hungary) (Fig. 1).

SWOT analysis, force field and problem analysis

In the beginning of research, the method of SWOT (strengths, weaknesses, opportunities, threats) analysis was used to characterize the conditions in the Velká Fatra NP. The study has begun in 2011 and it has been updated throughout the whole research. When the SWOT analysis was used for evaluating the intensity of mutual relations, a three scale score was kept. The positive relationship was evaluated on a scale ranging from 1 to 3, and the negative correlation was evaluated on a scale ranging from -3 to 0. Subsequently tables were drawn up where there were assessed strengths with opportunities, strengths with threats, weaknesses with opportunities and weaknesses with threats. After the aggregation of the results, the matrix interaction of individual components was made out, where based on the results, the most appropriate strategy was suggested, strategy which should be targeted by the Management of Velká Fatra NP in order to achieve certain objectives. In order to assess more accurately, input data about Velká Fatra NP was evaluated after description of the weaknesses and threats by “force field analysis” and “problem analysis”.



Fig. 1. Localization of the National Parks selected for the study. 1. Bohemian Switzerland National Park (The Czech Republic), 2. Bükk National Park (Hungary), 3. Bieszczady National Park (Poland), 4. Veľká Fatra National Park (Slovakia)

Methodology IPAM

After summarizing all the relevant information about the condition of the NP, the methodology of the system Integrated Protected Area Management (IPAM) was used to evaluate management. IPAM software is based on Apache 2.0 web server, which is a widely used HTTP server for the Internet that runs on the Linux operating system. PA managers and professionals access the system publicly from common web browsers. User identification is performed on the portal IPAM (Jungmeier et al., 2005). Throughout assessing the management of PAs via the system IPAM the following operation was elected: create a user profile on page www.ipam.info → create a profile assessment of PA → self-assessment and control of individual areas of management of PAs in the preparatory phase, the phase of the basic and detailed planning, implementation phase and the phase of connecting into the network → evaluation report → recommendations. Procedure assumes knowledge of all areas of management of PAs by the respondent (Vološčuk, Švajda, 2008).

In order to obtain input data, the exploratory method is used – standardised questionnaire or structured interview, in which respondents are being asked questions that have been made out by an IPAM (121 questions intended to assess management areas). Questions were evaluated in three categories – as completed, as started, as not started. Self-assessment is completed by a report about development and standardised recommendation within the management. However, the most detailed management evaluated was the one applied in Velká Fatra NP. At the same time the recommendations for change within the management were adapted, especially since work was focused mainly on this NP. For this reason the conditions in Velká Fatra NP were evaluated by several evaluation tools for the application management. In the Bohemian Switzerland NP and Bükk NP recommendations within applied managements were developed for those areas to which IPAM system in evaluating of management allotted high priority. Recommendations within management of Bieszczady NP have been developed for all departments, since the IPAM system did not assign a high priority for even one of them.

Survey methodology of environmental consciousness and education

A survey of environmental awareness and education took place between students of grammar schools and secondary schools in the areas where the NPs are located and outside the regions, over the years 2012–2014. Tabular overview of states, cities and municipalities, schools and numbers of respondents for the individual states participating in our survey is given in table 1. The percentages of respondents for individual states and their region of residence are expressed in table 2. The ratio of respondents in each country of the region where the NP was located and outside the NP is almost balanced and represents 53% (695 respondents) and 47% (606 respondents). The statistical population included 1301 respondents.

A survey of environmental consciousness was realised by the method of interview. As chosen method in order to obtain the necessary information, a tool of exploratory research was used; such tool was proposed by us in the form of a non-standardised questionnaire. The questionnaire consisted of 20 questions which were divided into three areas: P – knowledge about the park (8 questions), E – knowledge about environmental consciousness (5 questions) and O – general knowledge in the area of nature conservation (4 questions). The first three questions were for identification purpose; participants were asked to provide information about age and place of residence. The questionnaire was distributed in four language versions.

In the statistical analysis of the questions in the areas P, E, O, codes from -5 to 5 were assigned. Code “-5” was assigned in case the respondents did not answer correctly. Code “5” was assigned in case respondents presented correct answer and code “0” when they didn’t know how to answer. Then their average was calculated for each

Tab. 1. General characteristics of the target groups of the study

National Park/ Country	The city in the vicinity of the National Park	The city further away from the National Park	Name of school	Number of respondents
Bohemian Switzerland NP/ Czech Republic	Šluknov	-	Secondary School of Forestry and Social Vocational School	127
	-	Nymburk	Middle School of Nymburk	133
	-	Kolín	Middle School of Kolín	
	-	Čáslav	Middle School and Secondary Technical School of Education	
Bükki NP/ Hungary	-	Kutná Hora	Middle School of Jiří Orten	99
	Heves	-	Catholic School of Technology and Economics of Janos Vak Bottyán and Middle School	
	-	Debrecen	Gabor Bethlen Economic Second- ary School and Vocational School	94
Bieszczady NP/ Poland	Ustrzyki Dolne	-	Team of High Schools of Józef Piłsudzki and Lyceum	170
	Krosno	-	Municipal Team of School No. 4, II Lyceum of the Constitution of May 3rd	30
	-	Kraków	II Lyceum of King Jan III Sobieski	100
	-	Kraków	X Lyceum of the National Educa- tion Commission	96
Great Fatra NP/ Slovakia	Žilina	-	Trade School of St. Thomas Aquina- s	171
	Martin	-	Middle School of William Paulíny- Tóth	98
	-	Poprad	Secondary Vocational School "Svit"	118
	-	Lučenec	Middle School of Božena Slančíko- va-Timrava	65
Total	6	8	15	1301

Tab. 2. Division of respondents according to their region of residence

Residence	Czech Republic		Hungary		Poland		Slovakia		Total
	Village	City	Village	City	Village	City	Village	City	
In the vicinity of the national park	36	91	50	49	96	104	130	139	695
Further away from the national park	60	73	26	68	77	119	65	118	606
Total	96	164	76	117	173	223	195	257	1301
Percentage	7	13	6	9	13	17	15	20	100

area individually. The questions were processed in the statistical software IBM SPSS Statistics 19 and in MS Excel 2007.

At the beginning, groups were studied by homogeneity test of variance of several independent random choices (Leven's Test). Leven's test results have confirmed that the different groups are not homogeneous. Moreover, not all of the groups were the same size. Therefore, in other analyses, non-parametric tests had to be used. In the case of all tests, there is a significant difference at $p \leq 0.05$.

After evaluating all the answers within the survey three null hypotheses were determined: H_{01} = in response to the questions concerning the following aspects: P – students awareness about the park, E – environmental consciousness of the students, O – general knowledge in the area of nature protection, there is no significant difference between students from the city and the village; H_{02} = in response to the questions concerning the following aspects: P, E, O, there is no significant difference between students from the region of the NP and outside the NP; H_{03} = in responses to the questions concerning the following aspects: P, E, O, there is no significant difference between students from individual countries. Based on H_{01} , H_{02} , H_{03} alternative hypotheses (H_1 , H_2 , H_3) were specified. Hypothesis H_{01} and H_{02} were tested using the Mann-Whitney's test and H_{03} hypothesis was tested using the Kruskal-Wallis test.

Additionally (individually for each country and collectively for all countries) statistical significances of the level of students knowledge were compared, through the number of points obtained in the questions: *“How many National Parks are there in your country?”* and *“What is the logo of the analysed National Park?”* (Kruskal-Wallis test), *“What is the logo of the analysed National Park?”* at individual states level (Kruskal-Wallis test and Mann-Whitney's test), *“What sources did you obtain the information about the National Park from?”* and *“Which attractions do you use most often when visiting the National Park?”* (Friedman's test), *“Would you like to engage in environmentally beneficial activities organised by the management of the National Park?”*, *“Do you agree with the principles of conservation in the National Park?”* and also the question *“Will closing the National Park as an institution have a negative impact on the region?”*; a comparison has been made between all countries, as well as between individual countries (Wilcoxon's test); finally, the order for the individual countries in the quantity of the most frequently presented responses to these questions was set.

Results

SWOT analysis of Velká Fatra National Park

After assigning assessment scales, the relationship between the various constituents was reached after summing up all the values into one final amount for each comparison. When comparing strengths with opportunities, 895 positive values were obtained.

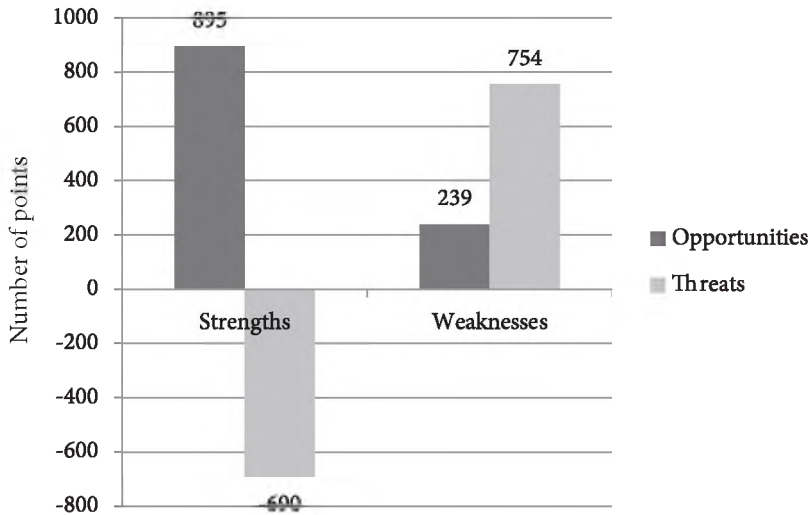


Fig. 2. Comparison of SWOT analysis components based on obtained points

When comparing strengths with threats, the negative value of -690 was reached. When comparing weaknesses with opportunities 239 positive values were obtained, and after comparing weaknesses with threats we got 754 positive values (Fig. 2). After the summary of the final results, for individual components was designed the matrix of interactions of individual components, where based on the highest value of the strengths the most appropriate strategy was suggested which the administration of Velká Fatra NP should focus on and follow in order to achieve defined objectives. The most appropriate recommendation was to use the strategy Maxi-Maxi.

In working out the “force field” analysis, the SWOT analyses were based on defined weaknesses and threats. For each defined problem, the worst development of the issue was characterised, in case it is not possible within the management to reduce the forces which are deepening it. Also a possible alternative was suggested as a solution for these defined problems. The analysis showed that the most defined problems concerning the prevention of pollution in the PA, support the development of tourism and soft tourism.

Comparison of considered management through IPAM system in surveyed National Parks

To view the differences between the various NPs in the achievement of the performance, the five phases of management systems assessment IPAM were monitored, and the graphical comparison was made (Fig. 3). At all stages the best percentage score was achieved by Bieszczady NP. In the pre-phase the weakest rating was obtained by

Bohemian Switzerland NP. In the phase of basic planning and at the phase of connection in the network the worst rating was reached by the Velká Fatra NP. In the detailed planning phase and the implementation phase Bükki NP had the weakest percentage evaluated. In the pre-phase, in the detailed phase and in the implementation phase, Velká Fatra NP had the second best score.

Environmental consciousness and edification (education) in the surveyed National Parks

Comparing whether there is a significant difference in knowledge between all students from city and village in the aspects: P, E, O together, in all countries were obtained the following results of Mann-Whitney's test: in area P: $Z = -0.581$; $p = 0.561 > 0.05 \rightarrow H_{01}$; in area E: $Z = -0.761$; $p = 0.447 > 0.05 \rightarrow H_{01}$; in area O: $Z = -0.052$; $p = 0.958 > 0.05 \rightarrow H_{01}$. Based on these results in all three areas H_{01} was adopted.

In the evaluation of the differences between students from the region of the NPs and out of the region in all aspects P, E, O together, in all countries were obtained the following results of Mann-Whitney's test: in area P: $Z = -1.303$; $p = 0.193 > 0.05 \rightarrow H_{02}$; in area E: $Z = -0.764$; $p = 0.445 > 0.05 \rightarrow H_{02}$; in area O: $Z = -2.914$; $p = 0.004 < 0.05 \rightarrow H_2$. Based on these results, the hypothesis H_{02} was rejected and adopted the alternative hy-

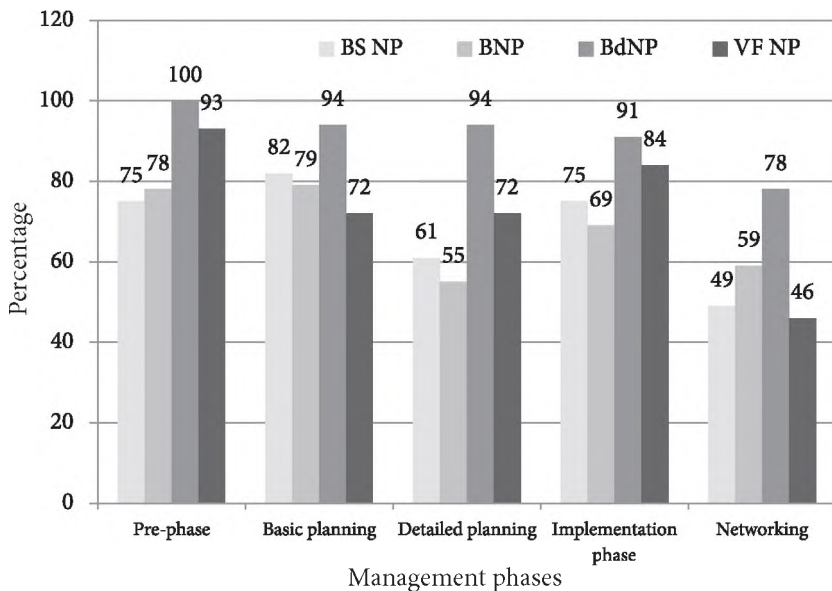


Fig. 3. Comparison of percentage of performance in the individual management phases in evaluation system IPAM in all National Parks; BS NP – Bohemian Switzerland National Park, BNP – Bükki National Park, BdNP – Bieszczady National Park, VF NP – Velká Fatra National Park

pothesis H_2 . In aspect O students from the region of the NPs introduced more answers which show that they understand the issue of nature conservation than the students from the region outside the NPs in all surveyed countries.

When comparing whether there is a difference in knowledge among all students in the aspects P, E, O together, between individual countries were obtained the following results of Kruskal-Wallis test: in area P: $\chi^2 = 201.461$, $df = 3$, $p = 0.000 < 0.05 \rightarrow H_3$; in area E: $\chi^2 = 22.461$, $df = 3$, $p = 0.000 < 0.05 \rightarrow H_3$; in area O: $\chi^2 = 225.201$, $df = 3$, $p = 0.000 < 0.05 \rightarrow H_3$. Based on these results, the hypothesis H_{03} was rejected and alternative hypothesis H_3 was adopted in all areas.

Differences in responses under the questions “*How many National Parks are in your country?*” and “*What is the logo of the analysed National Park?*” were statistically significant (Kruskal-Wallis test for the first question: $\chi^2 = 315.856$, $df = 3$, $p = 0.000 < 0.05$, for the second question: $\chi^2 = 320.197$, $df = 3$, $p = 0.000 < 0.05$). Under the first question the order was: Poland, Czech Republic, Slovakia, Hungary and for the second question: Czech Republic, Poland, Hungary, Slovakia.

The accuracy of the answers to the question “*What is the logo of the analysed National Park?*” is a significant difference between all surveyed countries (Kruskal-Wallis test: $\chi^2 = 320.197$, $df = 3$, $p = 0.000 < 0.05$). The order was as follows: Czech Republic, Poland, Hungary and Slovakia. When testing the differences between individual countries, the results were as follows: Czech Republic – Poland (Mann-Whitney’s test: $Z = -1.657$, $p = 0.097 > 0.05$; is not a significant difference), Hungary – Poland (Mann-Whitney’s test: $Z = -9.294$, $p = 0.000 < 0.05$; is significant difference), Hungary – Slovakia (Mann-Whitney’s test: $Z = -2.302$, $P = 0.021 < 0.05$; is significant difference).

The order of the answers in the question “*What sources did you obtain the information about the National Park from?*” was clear: school, internet, at home, media (TV, radio), publications (Friedman’s test, $\chi^2 = 722.559$, $df = 4$, $p = 0.000 < 0.05$). The order of the answers in the question “*Which attractions do you use most often when visiting the National Park?*” was clear: hiking trails, other (cultural monuments, ski resorts), spa (Friedman’s test, $\chi^2 = 1096.653$, $df = 4$, $p = 0.000 < 0.05$).

When testing the difference between the questions “*Would you like to engage in environmentally beneficial activities organised by the management of the National Park?*”, “*Do you agree with the principles of conservation in the National Park?*” and “*Will closing the National Park as an institution have a negative impact on the region?*”, a clear difference was confirmed (Wilcoxon’s test: for the first and second question – $Z = -17.440$, $P = 0.000 < 0.05$; for the second and third question – $Z = -5.658$, $p = 0.000 < 0.05$). Testing the differences between the first and the second question and between the second and the third question for individual countries, a clear difference in all countries was confirmed (Wilcoxon’s test: Czech Republic, for the first and second question – $Z = -7.160$, $p = 0.000 < 0.05$, for the second and third question – $Z = -2.500$,

$p = 0.012 < 0.05$; Hungary, for the first and second question – $Z = -3.780$, $p = 0.000 < 0.05$, for the second and third question – $Z = -3.130$, $p = 0.002 < 0.05$; Poland, for the first and second question – $Z = -10.818$, $p = 0.000 < 0.05$, for the second and third question – $Z = -2.000$, $p = 0.046 < 0.05$; Slovakia, for the first and second question – $Z = -1.103$, $p = 0.000 < 0.05$, for the second and third question – $Z = -3.545$, $p = 0.000 < 0.05$). Regarding the number of responses which are indicator of sufficient knowledge of the respondents in activities beneficial to the NP among individual countries, they were in the following sequence: the first question – Hungary, Czech Republic, Slovakia and Poland, the second question – Slovakia, Poland, Czech Republic, Hungary, and the third question – Poland, Slovakia, Czech Republic and Hungary.

Comparing the level of students knowledge of all the countries of the Visegrád Four, which was expressed by the number of points obtained in the questionnaire for individual areas P, E, O, students achieved the best results in the aspect E (50% of respondents reached less or more than 12.5 points), and the worst results in the aspect O (50% of respondents reached less or more than 7.5 points) (Fig. 3). It also detected in aspect E the greatest dispersion of results in comparison to other aspects. There are respondents who have extremely low knowledge in comparison to other aspects, some of them achieve even negative values.

Discussion

SWOT Analysis

Based on the results of the SWOT analysis (Fig. 2), Maxi-Maxi was selected as the best strategy, aiming to maximize the usage of the opportunities – its strengths and it focuses on their continuing strengthening and also on predicting the development of the environment in the NP, either internal or external (Lesáková, 2004; Papula, 2005). The strengths of Velká Fatra NP are in the size, condition and preservation of its area. Therefore, the individual measures should aim to support the protection of this area with regard to the development of economical tourism (Považan et al., 2014).

Through summarizing and naming all the findings of Velká Fatra NP, it is possible to divide the negatives named by this analysis into: problems connected with anthropic effects, complications of vulnerable ecosystems, the disadvantages associated in the park territory with land owners and with other stakeholders. Complications are due to the lack of environmental education and problems are connected with the absence of strategies and strategic documents (in various fields) necessary for the management of the park. The administration of Velká Fatra NP should therefore focus not only on the education and edification of pupils and students, but also surrounding population and other stakeholders (Powell et al., 2011; Stern et al., 2012; Weiland, Morrison, 2013; Stern et al., 2014). In addition to the activities that must be implemented by employees

of the administration of Velká Fatra NP, whenever possible, the landowners must be informed of the vulnerability of the ecosystems, as well as the care they require.

Through “problem analysis” the reasons why the negatives arised were specified. On the other hand, objectives on how to resolve these issues were characterised. As key solution the education of all target groups was proposed, so as to achieve sustainable development of Velká Fatra NP: strengthening the competence of Velká Fatra NP as an extension of the area that the administration of the Care Program of the NP will be able to manage; the implementation of measures aimed to the extension of competences of the Care Program of the NP; strengthening the promotion of the park (Repiský, Švajda, 2012).

The recommendation of the IPAM system for the different phases of management in the National Park

The most detailed management applied in the Velká Fatra NP was evaluated and also recommendations for changes within the management were adapted, especially since the presented work focused on this specific NP. In the Bohemian Switzerland NP and Bükk NP recommendations were worked out within applied managements for those areas to which the IPAM system in evaluating management allotted high priority. Recommendations under management of Bieszczady NP have been developed for all areas, since the IPAM system did not assign a high priority to even one of them (Fig. 3; Tab. 3).

Tab. 3. Recommendations of IPAM system for the analysed National Parks, concerning each phase of management

Basic planning phase
– Working out of the plan step by step.
Detailed planning phase
– Working out regional economic programs, specific planning, support for investment through appropriate incentive.
Implementation phase
– Recommends the creation of the custom module for internal control needs, focus on the preparation of new financing methods,
– In the field of communication and participation III of the reassessment forms of communication,
– Field of regional development Protected Areas aims to create and by sequel implementation of the regional economic program,
– In the field of the financing and financial plan recommended to work out a business plan of the organization,
– In the field of impact appraisal and limitations it is necessary to work out overview of potential threats within the environment in the Protected Areas.
Networking phase
– Connection to the networking general, connection to the networking economic, connection to the networking social.

Environmental consciousness and environmental edification of students

When comparing whether there is a significant difference in knowledge between all students from city and village in areas: P – awareness of the park, E – environmental consciousness, O – common knowledge regarding the protection of nature, within all the states, there was not a statistically significant difference. It is considered that the possibility of access to information of students living in the village and in the city is similar, because they have similar options concerning access to the Internet, as well as to other media.

While evaluating the difference between the students within the region where the NP is located and outside that region, in areas P, E, O together, in all countries was found a significant statistical difference only in area O. In this area students from the region of the NP indicated more answers which show that they understand the topic of the protection of nature like the students from outside the NP region. Therefore it was asserted that the NPs as local centers of environmental education have an impact on the understanding of the need to protect nature, but their educational activity is insufficient in areas P and E for all the groups of respondents, and in area O the NPs should focus on strengthening the educational action for students in regions outside the NP. Strengthening of cooperation with schools was recommended, because the respondents answered the question “*What sources did you obtain the information about the National Park from?*” in the following sequence: school, internet, home, media and publications. Furthermore, managements of the NPs should focus on updating websites and making them more attractive not only to the monitored target group, but also to others (Haas et al., 2008; Urban, 2009; Urban, Bitušík, 2015).

The significant statistical differences were found in comparing knowledge between the students of all countries in areas P, E, O – together and between individual countries. While evaluating the environmental consciousness and the edification of students, the weakest results were obtained by students from Hungary and the best ones by students from Poland (Fig. 4). It was assumed, that this condition is affected by the fact that in Poland, the teaching of environmental education is a part of training at middle and high schools. There is a curriculum which is closely and strictly defined and which students have to manage (Guziak, 2012). Within this subject the training focuses also on the knowledge of the region of residence (Stern et al., 2012).

In Czech Republic, the environmental education in middle and high schools is coordinated by ecological education coordinators; each school has such coordinators and this helps teachers to apply ecological education into each subject. It places great emphasis on the professionalisation of environmental education coordinators (Mose-ly, Reinke, 2005; Švecová 2008).

In Slovakia, environmental education is present in middle and high schools and it is a part of the curriculum, but it is up to the teachers to what extent they will abide to it. As a cross-cutting theme in Slovakia the following problems are encountered at the moment: formalism, superficiality, implementation of complexity, incompleteness and fragmentation of information and the lack of teacher qualification (Kancír, Suchá, 2012).

In Hungary there is a tuitional subject called “Getting To Know Nature”, where students learn how to build a relationship with nature. This subject is not required in the curriculum, but it is recommended and it is therefore up to the teachers, to what extent they will abide to it. Within vocational subjects such as biology and ecology, especially in Hungary, attention is not paid to this issue of environmental education. Ultimately, it was concluded that teachers are the ones responsible for choosing textbooks and teaching methods. The administration introduces only a list of suitable textbooks (Szalatnyai, 2010). On the grounds of the results achieved Slovakia, as well as in the Hungarian conditions with regard to schools, it was suggested to build a system of environmental coordinators according to the Czech Model (Repka et al., 2014).

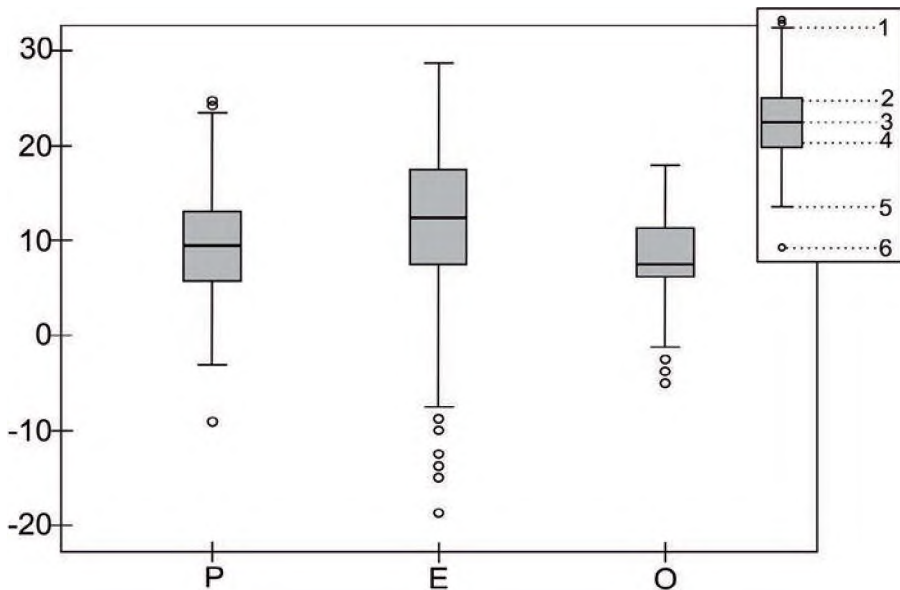


Fig. 4. Comparison of the level of students knowledge together for all the countries of the Visegrád Group, expressed as the amount of points obtained in surveys into areas: knowledge about the park – P (median: 9.5), general environmental students awareness – E (median: 12.5), and understanding the necessity of nature protection – O (median: 7.5); 1 – maximum, 2 – upper quartile, 3 – mediana, 4 – lower quartile, 5 – minimum, 6 – extremum

The lack of knowledge possessed by the Slovak respondents with regard to the question “*How many National Parks are there in your country?*”, as well as the question “*What is the logo of the analysed National Park?*”, justified that the administration of Veľká Fatra NP is not perceived by the target group in the same form as the other foreign NPs administrations which were analysed. Likewise, it could be said that within the research dealing with the comparison of NP websites of Slovakia, Czech Republic and Poland, the level of NP websites in Slovakia was assessed as rather low (Repiský, Švajda, 2012). While testing the question “*Which attractions do you use most often when visiting the National Park?*”, according to research, it was found out that the top places are occupied by hiking trails, followed by other places (such as cultural monuments, ski resorts) and spa. It is necessary to operate seasonal tourist information centers and also to update the information for tourists on the websites of the NP regarding weather, accessibility of tourist paths and means of transport (car, bus, train and parking, the availability of paved roads in the NP etc.) on the main tourist paths (Beregszászi, 1995).

Most responses, demonstrating that students possess awareness about environmental beneficial activities organised by the administration of the NP, and which are necessary for the protection of the administered area, were given by students from Czech Republic and Hungary, and the least by students from Slovakia and Poland. The differences in the public interest regarding volunteering in different NPs are explained by the fact that in 2014, in the Bohemian Switzerland NP there were 18 voluntary work sessions carried out with involvement of 458 participants. In the Bükk NP voluntary work is carried out in several places on a particular day. In the Veľká Fatra NP there is approximately one voluntary work session per year in one particular place. In Bieszczady NP, in 2014, 35 people volunteered to help the NP, but in this case volunteering is limited because it is not a one-time and a one-day event, but volunteers will spend more days in activities beneficial for the NP (travel, food and accommodation are reimbursed). Furthermore, volunteers have to be consenting adults, they have to have good physical condition etc. In Czech Republic and Hungary the situation in this area is different also because the conditions are not set as strictly as in Poland (Repka et al., 2014).

Conclusions

In Veľká Fatra NP it is possible to divide negative problems to: disadvantages associated with anthropic effects, complications of vulnerable ecosystems, the disadvantages associated with land owners and with other stakeholders in the park. The complications of education and environmental problems are associated with the absence of policies and strategic documents. For a better functioning of the organisation were suggested the strengthening of staff of the administration of Veľká Fatra NP – [1].

For the assessment and subsequent comparison of applied management in Veľká Fatra NP and analogous NPs of Visegrad Four, it was concluded that Bieszczady NP was the best evaluated, through the assessment methodology IPAM. The appropriate application of management is also influenced by the fact that the Bieszczady NP has all the strategic documents and has legal personality. In addition to the benefits of legal personality, NPs in Poland are charging fees (hiking trails, caves) which is generating regular benefits – [2].

Research has confirmed a statistically significant difference in the environmental consciousness of students in surveyed countries within the region where the NP is located and outside that region. When comparing the results it was found that with regard to the environmental consciousness within the individual questions, students from Poland and Czech Republic were better than the students from Slovakia and Hungary. The system of environmental education in Poland and in Czech Republic is well adjusted in schools. – [3].

In the area of environmental education and edification it was recommended to strengthen the cooperation of the NP VF with middle and high schools. It is necessary to understand that the NP or any other type of PA does not represent the educational system in the country, but it is intended to be helpful in deepening and acquiring experiences of students in areas that school as an institution is not able to provide with quality to the students – [4].

In Veľká Fatra NP was recommended the implementation of measures that will lead to the elimination of defects named within the applied methodology assessment of the management of the PAs. The shortcomings in the management of the NP were caused by deficiency of documents, as well as their inadequate preparation, such as: care program, zoning of the NP, tourism strategy both as part of the school programs, as well as regional economic programs – [5].

The analysis of the certain partial aims [1–5] in this study showed, that there are many opportunities to improve the management of Veľká Fatra NP, especially with regard to its perception as an institution.

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Abstract

The present study deals with the evaluation of the management of Velká Fatra National Park and its comparison with three other selected national parks of the Visegrád Four: Bohemian Switzerland National Park (Czech Republic), Bieszczady National Park (Poland) and Bükk National Park (Hungary). The information about Velká Fatra National Park was acquired through SWOT analysis. The weaknesses and threats found following SWOT analysis were further evaluated by an analysis of the “force field” and “problem analysis”. The management applied in individual parks was evaluated through the expert system Integrated Protected Area Management (IPAM) with the aim to improve the present management. Another part of the examination is the evaluation of the environmental edification and of the consciousness of students of grammar and secondary schools, both in the region where the National Park is located and outside that region. The examination for this study was carried out between 2010–2014. A survey of the environmental consciousness and edification has been implemented in all surveyed countries and the tool of exploratory method was a questionnaire, which was distributed to 1301 respondents. The survey managed to confirm the assumption that in some areas the level of environmental consciousness of the target group is very low. This situation is justified by the fact that schools do not have a precise definition in what form and to what extent attention should be paid to this field. Another reason is the insufficient cooperation between schools and National Parks.

Key words: Bieszczady National Park, Bohemian Switzerland National Park, Bükk National Park, environmental education, IPAM, SWOT analysis, Velká Fatra National Park

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Zarządzanie i edukacja ekologiczna w Parku Narodowym Wielka Fatra (porównanie z innymi parkami Grupy Wyszehradzkiej)

Streszczenie

Opracowanie dotyczy oceny zarządzania w Parku Narodowym (PN) Wielka Fatra oraz porównania jego jakości z wybranymi trzema PN Czwórki Wyszehradzkiej: PN Czeska Szwajcaria (Republika Czeska), Bieszczadzki PN (Polska) oraz PN Góry Bukowe (Węgry). Informacje wstępne na temat PN Wielka Fatra uzyskano dzięki analizie SWOT. Słabe strony zarządzania i zagrożenia, sprecyzowane dzięki analizie SWOT, zostały następnie ocenione analizą „pola siłowego” oraz analizą „problemową”. W celu poprawy sposobu zarządzania, obecne zarządzanie w poszczególnych PN zostało ocenione przez Zintegrowany System Zarządzania Obszarami Chronionymi (Integrated Protected Area Management – IPAM). Drugą częścią badań była ocena wpływu sąsiedztwa PN na edukację i świadomość środowiskową uczniów gimnazjów oraz szkół średnich w regionie, w którym znajduje się PN, a także poza tym regionem. Badanie przeprowadzono w latach 2010–2014 we wszystkich czterech analizowanych krajach. Zastosowano technikę ankiety, w której narzędziem był kwestionariusz ankiety audytoryjnej, dystrybuowany wśród 1301 respondentów. Wyniki badań potwierdziły założenie, że w niektórych obszarach edukacji środowiskowej poziom świadomości populacji statystycznej był bardzo niski, zarówno w regionie PN, jak i poza tym regionem. Jedną z przyczyn takiego stanu jest fakt, że programy szkolne nie definiują precyzyjnie w jakiej formie i zakresie powinna być realizowana edukacja środowiskowa. Innym powodem może być niedostateczna współpraca między szkołami i PN.

Słowa kluczowe: Bieszczadzki Park Narodowy, Park Narodowy Czeska Szwajcaria, Park Narodowy Góry Bukowe, edukacja środowiskowa, IPAM, analiza SWOT, Park Narodowy Wielka Fatra

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