

Recreational capacity of the territory of Ivano-Frankivsk region, Ukraine

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ABSTRACT: The article considers natural recreational capacity of districts of Ivano-Frankivsk region for peak seasons (winter and summer period). The basic parameters for determining natural recreational capacity of Ivano-Frankivsk region are analyzed. In the course of research it has been identified that mountainous areas are the most prospective for the development of recreational and tourist natural resources use, while industrial towns are the least suitable, due to small nature recreational area. The indicators of natural recreational capacity of the territory can be used to assess the prerequisites for the development of recreational activities.

KEY WORDS: recreational capacity, recreational and tourist natural resources use, natural resources, recreational period

1. Introduction

Given the multiplicity of relations between different the types of recreational and tourism activities and properties of the environment, it should be noted that natural recreational capacity of the territory, which determines the impact of recreational activities on natural systems, takes place in the process of recreational and tourist natural resources use.

The characteristics of recreational, social, economic, historical and cultural conditions of the territory, as components of recreational and tourist natural resources use is of great importance, because any area which is considered as recreational and tourist one, is positioned in the context of existing therein recreation and tourist resources. Natural recreational capacity of the territory is an important factor in shaping the recreational and tourist natural resources use, which is considered and calculated for prevision and avoiding difficult situation between natural environment and consumers of various recreational resources.

Given the multiplicity of relations between the types of recreational and tourism activities and properties of the environment, it can be noted that natural recreational capacity of the territory, which determines the impact of recreational activities on natural systems, takes place in the process of recreational and tourist natural resources use. Therefore, it is necessary to collect appropriate data to be able to influence on these phenomena.

1.1. Scientific studies on this subject

Recreational capacity, as a part of recreation management, is a subject of interest for many scholars, because of its applied nature. The current researches of Kravtsiv (1999), Kilinska (2007, 2011), Rudenko (1999), Dutchak (2006), Fomenko (2007), Skutar (2010) provide the ground for identification and evaluation of the role of natural and socio-economic conditions for the development of recreational and tourist natural resources use. The regional structure of tourism and recreation resources of Ivano-Frankivsk region is analyzed and evaluated by such scientists as Atamaniuk (2009) and Shepetiuk (2006). At the same time Ivanunik (2009) approved the method for determining natural recreational capacity in Chernivtsi region (Ukraine), the principles of which can be applied for analysis of the state of recreational capacity in other regions.

2. Study area

Recreational capacity of the territory is an important factor in the formation of recreation and tourism natural resources use. In the modern geographical studies special attention is paid to the regional aspect of recreation and tourism resources. However this problem is rather broad and requires constant study, development of new views and methods of investigation, which are based on the analysis of the data of previous research as well as generalized practice and introducing new approaches. Given the range of these scientific issues, the area of Ivano-Frankivsk region has been chosen as an object of research. Convenient geospatial location, natural diversity, favorable natural conditions, dense network of routes, historical and natural objects promotes recreation and tourism. However, the problem of glut of tourists on certain area can occur. Therefore, the aim of the research consists in the assessment of natural recreational capacity of Ivano-Frankivsk region on the basis of analysis of its constituent parts, i.e. districts of this region.

Ivano Frankivsk region has favorable geographical position. It is situated in the west of Ukraine and covers the area of 13.9 thousand square kilometers. In addition, it is an important junction between Ukraine and European countries, as it borders on Lviv, Chernivtsi, Trans-carpethian, Ternopil regions, and has a 50-km long state border with Romania (Maramureş County). Ivano-Frankivsk region is considered as one of the richest in terms of recreational resources.

The main objectives of research are the following:

- 1) to analyze the indicators for determining natural recreational capacity of the territory;
- 2) to evaluate natural recreational capacity of middle level administrative units - districts and cities of regional significance;
- 3) to determine the most promising areas in terms of tourism and recreation.

3. Materials and methods

The complexity of evaluative activity is predetermined by specificity of recreation tourism natural resources use. Recreational activities are related with the use of several natural factors. Studies in the field of recreational properties of natural systems, as well as information on allocation of engineering structures of different types and efficiency of tourist facilities, are of great importance.

Since evaluation of recreational and tourist natural resources capacity reflects the relationship between object and subject of research, the following stages of investigation can be distinguished:

- 1) identification of the object of evaluation;
- 2) identification of the subject, through the spectacle of which the evaluation is made;
- 3) formulation of evaluation criteria, which are defined by the scope and purpose of the study, as well as properties of the subject.

Making evaluation of the natural recreational capacity of territory in terms of recreational and tourist natural resources use is important for identifying the best option to attract territory without causing damage to the environment. In these terms natural recreational resources can be defined as factors and properties of the components of the environment, which possess favorable for recreational activities qualitative and quantitative parameters, and serve for recreation and tourism purposes (Rudenko, 1999).

Referring to this point of view natural recreational capacity of territory can be considered as total number of persons who can stay in certain the area without causing damage to the environment (Dutchak, 2006). Natural recreational capacity of territory depends on the area of the territory, norms of recreational loading, duration of tourists' stay, the number of tourists, the duration of comfortable weather period for recreation.

Natural recreational capacity is calculated for certain season by the formula:

$$V_i = \frac{N_i * S_i * C}{D_i} \quad (\text{Eq. 1})$$

where:

- V_i - natural recreational capacity of a specific territory;
- N_i - norm of recreational loading in certain territory (people / km²);
- S_i - area of natural recreational territory;
- C - duration of favorable period for recreation;
- D_i - the average duration of tourist's stay.

Recreation capacity reflects both the recreational and tourism resources reserves and degree of development of necessary infrastructure facilities.

Recreational activity is considered to be environmentally friendly. However due to excessive recreational loading even stable natural systems undergo changes (Kravtsiv & Hryniv, 1999). The norms of recreational loading serve as a basis for determining the natural recreational capacity of territory. The level of recreational loading on natural systems in the summer is much higher than in the winter. In addition, the low-lying areas have a weaker resistance to the recreational loading than mountainous ones.

Table 1 Normative standards of recreational loading on natural systems of Carpathian region

Natural systems	Norms of recreational loading (people / km ²)	
	Summer	Winter
Lowlands	80-120	30-50
Highlands	100-150	40-35
Mountains	110-200	60-160

These figures provide us with general notion of norms of recreational loading on various natural systems (Mazur, 2005).

It should be noted that we refer to norms of recreational loading on natural systems of Carpathian region to evaluate natural recreational capacity of the territory of Ivano-Frankivsk region, using the example of mid-level administrative units - districts and cities of regional significance. Therefore, the areas of both flat and mountainous terrain within Ivano-Frankivsk region are taken into account. Flat terrains are located in the north-eastern part of the region, occupying 2/3 of the area. The rest of the territory is occupied by the Ukrainian Carpathians. The line of demarcation can be observed as passing through the following towns: Bolekhiv - Dolyna - Perehinske - Solotvyno - Nadvirna - Yabluniv - Kosiv - Kutu.

Generally the territory of the region wears down from northwest to southeast. The lowest absolute height (140 m above sea level) is located within the flood plain of Dniester near the eastern boundary of the region. The plains with hills are densely cut by rivers with absolute height of 300-400 m above sea level (Zhupansky, 1960).

Therefore, in this study we have divided Ivano-Frankivsk region into three natural systems: lowlands (Rohatyn, Halych, Kalush, Tysmenetsia, Tlumach, Gorodenka, Sniatyn districts, the cities of Kalush and Ivano-Frankivsk) highlands (Bohorodchany, Kolomyja, Kosiv, Nadvirna districts, the city of Kolomyja), mountains (Dolyna, Rozhnyativ, Verkhovyna districts, the cities of Bolekhiv, Yaremcha).

According to the state land cadaster natural recreational territories include forested areas, water resources used for recreation, and private recreational lands (resorts, protected, health and recreation areas) (Ivanunyk, 2008).

According to the specialists' research, the period with the most favorable conditions for summer recreation with an average temperature of more than + 15°C lasts for at least 100 days per year, while for winter recreation with temperatures below 0°C and snow cover of 10 cm to 30-40 cm is more than 110 days. It is considered that discomfort zone takes place at temperatures lower than - 10°C (Luzhanska & Makhlynets, 2008). The average duration of favorable recreational period for Ivano-Frankivsk region is 110 days for winter, 115 days for summer. On the lower part of Ivano-Frankivsk region favorable recreational period lasts for about 125 days, while in mountainous areas it is 20-50% less.

In the Carpathians recreational period with favorable weather conditions lasts for about 5 months (from May to September), in the highlands - about 3 months (from June to August). Winter recreation period lasts from 3 to 5 months. The frequency of favorable weather conditions for this period is about 70%. The percentage of days with intense precipitation (above 5 mm per day) in summer on the flat part of the region is 18%. In mountainous areas this figure is much higher (Yaremche - 23%, Pozhzyzhevska - 26%) (Atamaniuk, 2009). The days with thunderstorms, fog, heavy rain in summer, as well as thaw, freezing rain and snow in winter are taken into account in this case. It is calculated that the average duration of tourist's stay is 10 days in summer, and 7 days in winter (Fomenko, 2007).

For the purpose of effective recreational development of the territory it would be proper to single out areas of limited recreational and tourist natural resources use, where restrictions are associated with environmental motifs (territories, which can acquire the status of protected area in perspective), areas of only walking accessibility (slopes, remote areas) or natural systems with low resistance to recreational activity. Recreationally undeveloped areas include territories, which cannot be used for recreational activities (arable land, forest nurseries, swamps and restricted to entry remote areas). Zone not scheduled for development includes forest plantations, which currently can be used for gathering mushrooms and berries, and, eventually, they will turn to the areas of mass recreation.

Table 2 Basic data for calculation of parameters of natural recreational capacity of the Ivano-Frankivsk region (Ecol. pasp. 2014, Statistical handbook, 2015)

No.	Administrative unit (district of Ivano-Frankivsk region)	Total area (thousand km ²)	Area of recreational territory (thousand km ²)	Duration of favorable recreational period (number of days)	
				Summer	Winter
1.	Bohorodchany	0,80	0,54	126	84
2.	Verkhovyna	1,25	0,96	104	100
3.	Halych	0,72	0,18	112	83
4.	Horodenka	0,75	0,17	117	74
5.	Dolyna	1,25	0,99	116	77
6.	Kalush	0,65	0,22	115	73
7.	Kolomyia	1,03	0,28	108	73
8.	Kosiv	0,90	0,51	105	82
9.	Nadvirna	1,30	0,84	114	110
10.	Rohatyn	0,82	0,17	120	73
11.	Rozhniativ	1,30	0,95	107	79
12.	Sniatyn	0,60	0,07	115	74
13.	Tysmenytsa	0,74	0,26	112	73
14.	Tlumach	0,68	0,16	110	75
15.	The city of Bolekhiv	0,30	0,19	115	80
16.	The city of Ivano-Frankivsk	0,08	0,008	110	73
17.	The city of Kalush	0,06	0,01	115	73
18.	The city of Kolomyia	0,04	0,003	108	73
19.	The city of Yaremche	0,66	0,54	115	95
Total in Ivano-Frankivsk region		13,93	7,051	2124	1503

The areas of intensive recreational activities include territories where traditional recreational and tourist natural resources use can be observed (approachability of recreational facilities, which are located near settlements, roads, ponds or low hills). Such areas also include territories with recreational and tourist infrastructure (arbors, tables, places for making fire, playgrounds, catering and accommodation facilities, parking lots). Rational use of recreational and tourist natural resources provides conditions for self-healing of natural systems.

3. Results

The results, obtained in the course of research, allow us to identify the most promising areas for the development of recreational and tourist natural resources use. The highest level of recreational capacity in Ivano-Frankivsk region is observed in Verkhovyna, Dolyna, Rozhnyativ, Nadvirna districts and Yaremche City Council's area. A variety of recreational and tourist resources, as well as diversity of the territory, makes these districts perspective in terms of recreational purposes. Mountain areas account for major part of the total recreational capacity of the region. The least suitable in these terms can be considered cities, due to the small percentage of natural recreational area, which tends to be overloaded, especially on weekends.

Local communities and environmental authorities in the territories of recreational and tourist natural resources use can regulate the flow of tourists by introducing alternative routes. This

factor should be considered while planning settlements of recreational purposes (Korobeinikova, 2010).

The indicators of recreational capacity of the territory can be used to assess the preconditions of recreational activities. Besides this methodology for certain recreational area, a detailed analysis of the tourist aspects, which have the greatest prospect of development and contribute to rational recreation and tourist natural resources use, should be carried out (Scutar, 2010).

Table 3 State of natural recreational capacity in Ivano-Frankivsk region

No.	Administrative unit (district of Ivano-Frankivsk region)	Normative standards of recreational loading (people/ km ²)		Recreational capacity (thousand people)		Total recreational capacity (thousand people)
		Summer	Winter	Summer	Winter	
1	Bohorodchany	110	50	689	324	1013
2	Verkhovyna	155	95	1547	1303	2850
3	Halych	80	40	161	85	246
4	Horodenka	80	40	159	72	231
5	Dolyna	120	65	1378	708	2086
6	Kalush	100	55	253	126	379
7	Kolomyia	110	55	332	161	493
8	Kosiv	140	80	749	478	1227
9	Nadvirna	120	70	1149	840	1989
10	Rohatyn	100	50	204	89	293
11	Rozhniativ	140	75	1423	804	2227
12	Sniatyn	95	40	76	30	106
13	Tysmenytssa	95	40	276	108	384
14	Tlumach	97	45	170	77	247
15	The city of Bolekhiv	135	70	294	152	446
16	The city of Ivano-Frankivsk	95	45	8	4	12
17	The city of Kalush	100	40	11	4	15
18	The city of Kolomyia	110	35	4	2	6
19	The city of Yaremche	135	78	838	571	1409
Total in Ivano-Frankivsk region		111	65	9721	5938	15659

4. Conclusions

Given the multiplicity of links between recreational activities and properties of the environment, it should be noted that natural recreational capacity of the territory should be taken into account, as it determines the impact of recreational activities on natural systems.

As far as Ivano-Frankivsk region is concerned, the highest natural recreational capacity can be observed in the following territories: Verkhovyna, Dolyna, Rozhnyativ, Nadvirna districts, Yaremche city concil territory. These districts are particularly promising due to diversity of recreational and tourist areas as well as the scale of natural resources and recreational areas. The natural recreational areas include forested areas, water resources used for recreation as well as recreational land (protected areas, resorts and areas for therapeutic and recreational purposes).

Most of the total capacity of the natural recreational area accounts for mountain areas, while cities are the least suitable in this terms, due to the small percentage of natural recreational area.

There is a risk of oversaturation of the territory with recreational and tourist facilities, which can lead to a loss of identity and attractiveness of recreational area. To overcome such phenomena it is necessary to develop less recreationally and tourist loaded areas and enhance their recreational capacity.

Regulating the number of tourists at certain area is an important factor for achieving balanced development of territory intended for recreational purposes. These figures should be taken into consideration not to make the residents of the territory feel discomfort because of excessive number of tourists.

In the oversaturated areas, for instance, the balance can be achieved through regulation of the number of tourists, which can be done by implementing measures for scattering number of tourists in time (high and low season), introducing some restrictions on traffic flow, etc.

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