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EVALUATION OF RECREATIONAL POTENTIAL OF FOREST-STEPPE ZONE OF THE TYUMEN REGION

SUMMARY. The article deals with the technique of an evaluation recreational potential of a forest-steppe zone of Tyumen oblast, based on a complex (integrated) evaluation of recreational resources. As a result recreational division into districts of territory of forest-steppe of Tyumen oblast has been offered.

KEY WORDS. Recreational potential, evaluation, grades, forest-steppe.

During the last decade in the Tyumen region different forms of tourism intensively develop. However, to date no studies have been devoted to assessing the recreational potential of the area, which would more directly shape the most promising and effective tourist destinations.

The most common questions of recreational opportunities in the Tyumen region have been considered in A.V. Marshinina, D.M. Maryinskihh, N.D. Shalaginova "Evaluation of recreational and tourist potential of the south of the Tyumen region", E.M. Kuzmina "Tourism in the cultural space of the south of the Tyumen region."

Steppe zone of the region with a wide variety of natural systems and the rich historical and cultural heritage allows considering it as a promising area for the development of tourism. Recreational potential of the area is a collection of natural, cultural, historical, social and economic conditions for the organization of recreational activities in a particular area [1]. Evaluation of recreational resources in the forest-steppe zone of the Tyumen region was carried out on the territories Abatskoe, Armizonson, Berdyuzhie, Golyshmanovo, Omutinskoe, Zavodoukovsk, Yalutorovsk, Isetskoe, Uporovo, Ishim, Kazanka and Sladkovo administrative districts.

In this study we used the method of a comprehensive assessment of recreational resources [2], [3]. Integrated assessment of resource and recreational potential of the area reflects the totality of partial assessments expressed by the sum or derivative of the conventional points. Its components are the assessment of natural and man-made resources (mainly of historical and cultural heritage).

For each indicator, the scale was developed with a step interval, for which the method of expert estimating was used. Indicators grouped in blocks (climate, topography, etc.), were estimated by converting digital data into points on the 3-point scale. The Perfect Score (3) confers optimal performance, lower (1) — less favorable indicators. For 37 indicators the weighting coefficient (KV) was calculated which reflects the importance of the indicator within the block.

Score in the block is calculated by the formula:

$$K_m = C_1K_1 + C_2K_2 + C_3K_3 + \dots + C_nK_n / K_1 + K_2 + K_3 + \dots + K_n,$$

where K_m — is an overall evaluation unit (integrated assessment), C_i denotes scores for i -th index, K_i presents the weighting coefficient of i -th index.

For the evaluation of the components of natural and recreational potential of the blocks the following criteria was used: 2,01-3 points for the most favorable resource; 1,01-2 points for a resource favorable; 0-1,00 score for a relatively favorable resource).

The general estimation calculated by the formula:

$$K_T = \sum (K_{\text{middle climate}} + K_{\text{middle landscapes}} + K_{\text{middle water}} + K_{\text{middle rating of plant and animal population}} + K_{\text{middle OOPT (Protected Areas)}} + K_{\text{general socio-economic evaluation}}),$$

In assessing the good climate for recreation variables Table 1 was used.

Table 1

Scale of determination of comfort of climate on estimated indicators

Indicators	Range of data			Weighting Factor
	1 point	2 point	3 point	
Light mode, hour/year	1850-1899	1900-1949	> 1950	5
Average amount of precipitation during the warm period, mm	301-330	271-300	240-270	3
Average amount of precipitation during the cold period, mm	61-80	81-100	101-120	3
Duration of the summer comfortable period, days	61-70	71-80	81-90	5
Average duration of the frost-free period, days	68-88	89-109	110-130	5
Average height of a snow cover, cm	< = 20	30-50	> = 51	3
Average of days with a blizzard	42-52	31-41	< 30	3
Average of days with fogs during the warm period	> 16	15-10	< = 9	1
Mid-annual speed of a wind, m/s	4,0-5,0	3,9-2,9	< = 2,8	3
Number of clear days, year	28-32	33-37	38-42	3
Number of cloudy days, year	147-157	136-146	125-135	3
Index of impurity of the atmosphere	> = 5	2-4	< = 1	4

Comfortable climate was determined by the duration of summer comfort period of more than 80 days, the average length of the frost-free period of 110-120 days, annual averages recurrence of favorable weather to 60%, temperature characteristics, precipitation. Evaluation of climate comfort was rated on a 3-point scale: 0-1,00 score denoting a climate that is not comfortable, 1,01-2 points denoting a moderately comfortable climate; 2,01-3 points denoting a pleasant climate.

The results showed no significant differences in comfortable climate areas due to their location in the forest-steppe zone. Climatic conditions comfortable for summer and winter tourism may promote for various forms of climatotherapy (health recreation) in warm weather.

In assessing the terrain we used as the main indicators dissection density (horizontal dismemberment), the depth of dissection (vertical dismemberment), the steepness of the slopes (in degrees). Landscapes were evaluated by aesthetics and diversity (Table 2).

Table 2

Scale definition of degree of a raggedness of a relief and esthetics of landscapes as estimated indicators

Indicators	Range of data			Factor weightinesses
	1 point	2 point	3 point	
Depth of a partition, m	< =5	6-25	> 25	4
Density of a partition, km	> 5	2,4-1,2	< 1,2	4
Steepness of slopes, degrees	< 3; > 10	6-10	3-5	4
Variety of landscapes, (quantity of types)	< = 3	4-6	> =7	5
Esthetics of landscapes, groups	I, II	III	IV, V	5

The whole area was estimated at two points, which corresponds to the category of favorable terrain for hiking, horse, ski and snowmobile tourism. The territory of Armizonskoe district received the lowest score, which describes it as a relatively favorable development opportunities for hiking and ski touring.

Evaluation of morphometric characteristics of rivers and lakes had been based on the parameters listed in Table 3.

Table 3

The characteristic of water objects for beach and bathing rest

Parameter	Usefulness degree		
	the favorable	rather favorable	the adverse
Coast	Dry, terraced, without the abrupt descents, suitable for development in natural state	Dry, but abrupt descents, often steep which development demands simple constructions for descent to water (if water has a beach strip)	Coast or are boggy, or very abrupt with high klify or break
Approaches to water	simply open	Demanding small clearings	Fenny, shrubbed, the closed
Beaches	Sand, small pebble	Grass, large pebble	Clay, peat, large stone

The end of Table 3

Extent shallows	20-100 m (on the sea) 20-50 m (on the river and the lake)	<100 m (on the sea) <20 m; > 50 m (on the river and the lake)	Shallow No
Character of a bottom	Sand and small pebble	Large pebble, silt sand, boulders	Silt, stone, clay, large sharp stone, the big plates covered with water microorganisms
Speed of a watercourse	< 0,3 m/s	0,3-0,5 m/s	> 0,5 m/s
Water temperature	180-240	160-170; 250-260	< 160 ; > 260
Sanitary-and-hygienic conditions	Pure, sources of pollution are not present	Easily removable sources of pollution, water self purity	Pollution exceed maximum concentration limit and sources of pollution are not removable

Criteria for evaluation of water basins for recreation are shown in Table 4.

Table 4

Scale of an assessment of water objects

Indicators	Range of data			Factor weightiness
	1 point	2 point	3 point	
Existence of the large rivers of the second and third order, quantity	1	2	> 3	4
Swimming season, days	< 30	31-40	4 1-50	5
Proportion of lakes, %	< =5	6-9	> =10	3
Morphometric characteristics of the rivers, point	< = 1,5	1,6-2,0	> =2,1	5
Morphometric characteristics of lakes, point	< = 1,5	1,6-2,0	> =2,1	5
Index of impurity of a surface water	> =4,0	2,0-3,9	< = 1,9	3

The analysis of the data led to the conclusion about the suitability of water bodies for sport tourism (rafting, boat tours) sport fishing, swimming (in specially equipped places).

An inconvenient access to the water, muddy bottom, the local water pollution, the abundance of blood-sucking insects are tackled as the limiting factor.

In assessing the recreational potential of the area from the position of having steppe PAs three parameters were used: the number of protected areas in the region, and the area of the protected area to the area of the region (Table 5).

Table 5

Scale of an assessment especially protected natural territories

Indicators	Range of data			Factor Weightinesses
	1 point	2 point	3 point	
Wildlife areas, unit.	1	2	> = 3	5
The occupied space, %	< 5	5-10	> 10	5
Nature sanctuaries, unit.	< 5	5-10	> 10	5

Estimating recreational attractiveness of forest-steppe zone according to the three indicators of PAs revealed that areas of Kazanka and Sladkovo are the most favorable for the development of eco-tourism. The rest of the territory, with the exception of Zavodoukovsk (relatively favorable) are favorable.

Assessment of socio-economic indicators showed that the adverse factors are the high degree of tilled areas (in some areas up to 80-90%), the uneven distribution of paved roads (the highest density of highways in the west), a small number of cheap hotels, tourist centers and collective accommodation facilities (Table 6).

Table 6

Scale of an assessment of socio-economic indexes

Indicators	Range of data			Factor Weightinesses
	1 point	2 point	3 point	
Extent of highways, km	350-550	560-750	> 750	4
Specific weight of highways with a firm covering, %	< 60	61-79	80-100	5
Tourist's organizations, unit.	1	2	> 3	2
Hotels, unit.	1	2	> 3	4
Sanatorium objects, recreation facilities and camp sites, unit.	< 3	3-5	> = 6	5
Archeology monuments (satisfactory safety), unit.	> = 10	11-30	> =31	5

Recreational resources of the forest-steppe region are characterized by comfortable climatic conditions, favorable terrain for hiking, horse riding, skiing and snowmobile types of tourism, availability of water basins (rivers and lakes) for health recreation and sports tourism, a sufficient number **of protected areas** for the development of ecological tourism.

These integrated assessment of forest-steppe zone allowed to divide the area into 3 areas:

1. The most favorable (> = 10.5 points): Zavodoukovsk, Yalutorovsk, Iset, Ishim, Kazanka areas, characterized by moderately and strongly dissected surface with medium to high forest cover, water bodies, with a large number of protected areas and the most aesthetically pleasing landscapes. In this territory it is possible to trace the highest concentration of natural reserves and parks (Kolmakovsky park, Zinovskiy mound, Grove Decembrists, Bochanka, Marino Valley, Sinitsinsky Forest, Mountain of Love, Kuchum Mountain), as well as a lot of archaeological sites, including

the famous Ingalskaya Valley. Here the main objects of historical and cultural heritage of regional importance are concentrated: Yalutorovsk Museum complex (memorial house of the Decembrists, National History Museum, the "House of Nature"), Memorial of the Decembrists, St. Nicholas Church, Cathedral of the Epiphany, St. Nicholas Church in Ishim, Ishim History Museum "Chernyakovskaya school"; Zavodoukovsky museum, Kolmakovsky park, Rafaylovo, Kirsanovo, A.L. Emelyanov Iset Local History Museum, Ilins Church (Kazan district). These spots make it possible to develop educational, medical, sports, beach, swimming, religious, ecological tourism, weekend itinerary.

2. Favorable (9.4-10.4 points): Sladkovsky, Abatskii, Omutinsky areas. There is much diversity of water basins of morphometric small quantities with medium or low forest cover, as well as protected areas. Historical and cultural sites are more diverse, there is a large number of archaeological sites. It makes possible to develop sporting, religious, ecological, beach-bathing, medical tourism.

3. Relatively favorable (≤ 9.3 points): Berdyuzhsky, Golyshmanovo, Armizonskoe areas. Perhaps the development of sports, beach, swimming, environmental, medical and health tourism are possible.

The results of the analysis of the recreational activities in the forest-steppe zone of the region show a very low efficiency of natural, cultural and historical resources of the area. It is important to name as the factors limiting the use of the resource potential of the region the lack of assessment work, the components of nature for tourism, the low level of development of tourism infrastructure, as well as lack of appropriate funding.

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