



Factor Assessment of the Aesthetic and Consumer Parameters of the Region

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Abstract

The designed aesthetic and consumer parameters of the region (coefficients of representation of objects) depend on the type of settlement, individual characteristics of the population, its psychological and physiological characteristics, features of the combination of aesthetic resources and accessibility of areas of public environmental management. Based on the results of the assessment, the existing problems of organizing the structure of land in the settlements of the region are identified and a methodology for mapping the assessment of the consumer parameter of the region is developed.

Keywords: Methods of socio-geographical study; Aesthetic perception; Aesthetic and consumer parameters of the environment; Environment representation coefficients.



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1. Introduction

In the context of constant socio-economic changes, there is an uneven distribution of aesthetically significant and attractive objects within the local and regional systems of settlement; it is established that they do not meet the needs of the population, which has determined the relevance of the study.

A number of leading Russian and foreign universities and research institutes are developing a variety of different approaches to assessing aesthetic resources. This direction is reflected in a number of works by famous scientists, namely K.I. Eringis, R.A. Boudrunas (Eringis and Boudrunas, 1968). A. Mellum, M.Iu. Frolova, V.A. Nikolaev, Iu.A. Vedenina, Kane P.S., Tricart J., Linton D.L. and others. At the same time, a significant part of the research is devoted to the study of more or less known and popular local territories, while the regional background was poorly represented in the known works. Currently, there is no specialized methodology for studying the aesthetic properties, aesthetic needs and resources of the “landscapes” of a particular “everyday” settlement or their system. Accordingly, we can offer a combination of methods of qualitative description and a sociological survey, respectively, two levels of research and assessment of aesthetic and consumer parameters of the regional environment (the aesthetic and consumer parameter means the value characterizing any aesthetic and consumer property of the environment), as well as an algorithm for conducting research (Frolova, 1994; Kane, 1981; Linton, 1968; Lutz *et al.*, 1982; Nikolaev, 2006; Vedenin and Filippovich, 1975; Антошкина and Фоменко, 2013).

2. Material and Methods

In our study, we focus on that aesthetic perception can occur at different scales and at any distance, while reflecting both the appearance (visual image) of the settlement in general and some of its parts. The landscape can combine various images, therefore not only a single landscape, but also a certain environment is to be assessed. At the same time, those parts of the living space, the environment (areas) that include the territory of the settlement and its immediate surroundings (adjacent territories) are explored.

The need to study these areas is explained on the one hand by the fact of the conditions being created within them necessary for the implementation of many needs, including aesthetic ones. During the period of personal development, the image of the landscape, its aesthetic properties are reflected not only in the formation of a specific list of traditional forms of nature management within it, but also in the appearance of a sense of psychological comfort, satisfaction, reflected in aesthetic assessments (Bunting and Guelke, 1979; Lopina and Kornilov, 2015).

As a result of the socio-geographical research, there are several differently varying images of the described space (the process of the conscious selection of elements of perceived reality - “representation” (“representation”, “image”). The result of building such a scientific model should be the quantitative indicators (coefficients) of the aesthetic-consumer parameters of the environment (understood as quantities that characterize any aesthetic and consumer properties of the environment).

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The considered space and its parts - areas - can be studied in three space-time forms: 1) the area in which the formation of the initial (children's) aesthetic preferences and the satisfaction of the needs of the subject occur; 2) the area where at the present time the aesthetic needs are formed in the subject, and their aesthetic needs are satisfied, including recreational ones; 3) the area where, in the opinion of the subject, it is possible to satisfy aesthetic requirements most effectively. It may coincide with the area located at an arbitrarily large distance from the first two, and not exist at all.

The working hypothesis put forward in substantiating the criteria and indicators suggested that the aesthetic needs are closely related with geographical conditions of residence, and therefore will differ in the settlements of different types; with the peculiarities of the respondent's connections with the spatial area (the origin is a citizen, a rural resident, the duration of residence in the given territory is indigenous, the local resident and the actual visitor); individual characteristics of respondents: gender, age, level of education, social status, nationality, etc. The listed and other individual qualities of the respondents, together with the emotional impact of the landscape and its individual components on a person, together form a psychological and aesthetic and aesthetic and consumer assessment (individual characteristics were taken into account to ensure proportional sampling for each studied locality, while the totality of all signs gives an idea of gender and age structure of the population; level of education, social and professional orientation).

Thus, we offer a set of diagnostic indicators (coefficients), which, in our opinion, will allow us to find the greatest differences of a settlement with others, conditionally subdivided into three following blocks:

Block 1: quantitative characteristics and features of the spatial areas and its population: the area of the territory, the number and density of the population, the proportion of indigenous and visiting residents, the average age of the inhabitants, the duration of residence in the locality and the frequency of change of residence.

Block 2: the level of representation (frequency of occurrence) in the answers of the respondents of individual objects (the coefficient of representation of objects) and their combinations in different space-time forms.

Block 3: level of satisfaction from the observed landscape (coefficient of positive representation of the observed space), landscape preferences and recreational load on the territory and individual objects.

Subjects to the currently existing serious theoretical developments of domestic and foreign scientists, we proposed a version of the methodology for assessing aesthetic and consumer environmental parameters at the regional level. A detailed study design and sequence of operations are presented in detail in a series of publications by the authors (Lopina and Kornilov, 2016; Rushton, 1979).

3. Results and Discussions

The results obtained at all stages of the study allow us not only to identify the main characteristics of representations in a particular locality, but also to search for statistical correspondences between the size, type of settlements, the nature of the surrounding environment and aesthetic-consumer parameters, as well as other possible indicators. For example, some differences in aesthetic estimates were noted when establishing the dependence of the coefficient of positive representation of the observed landscape on the percentage of indigenous people in a settlement ($r = 0.4795$; $p = 0.00040$). The analysis allowed us to trace a certain (moderate)

relationship between the coefficient of positive representation of the observed landscape and the duration of residence in a settlement ($r = 0.5783$; $p = 0.00002$). Relationship between such indicators as the level of education, social status, on the one hand, and aesthetic assessments of the observed landscape, on the other, are practically absent (r from -0.2689 to 0.1990). At the same time, a weak correlation was found between the age and the coefficient of positive representation of the observed landscape ($r = 0.3634$, $p = 0.0111$).

In addition, certain dependencies between the indicated individual characteristics of respondents, aesthetic assessments and the preferred place of residence were established: the dependence of the coefficient of positive representation of the observed landscape on the share of residents preferring the countryside ($r = 0.4100$; $p = 0.0160$); the dependence of the number of inhabitants who prefer the countryside on the average age ($r = 0.5965$, $p = 0.000005$); the dependence of the number of residents who prefer the countryside on the social status: a - pensioners ($r = 0.4136$, $p = 0.0028$); b - schoolchildren and students ($r = 0.3945$, $p = 0.0046$).

For the traditional rural and transitional type of settlements, a fairly moderate dependence of the level of landscape satisfaction on the number of inhabitants of the settlement is revealed.

Assuming that the density of the population and the area of the settlement affect the aesthetic perception of landscapes, we classified the populated areas of the region by population density and found, as in the first case (the dependence of the level of landscape satisfaction on the number of inhabitants of the locality), positive dynamics, however, without any close relationship. Certain dependencies are revealed in the analysis of the influence of specific objects observed by respondents and their amount on the level of landscape satisfaction (the coefficient of positive representation).

We also tried to take into account the exotic factor, defined as the degree of contrast of the place of possible stay of respondents with the purpose of recreational or other use of public lands in relation to a permanent place of residence. For example, the dependence of the level of landscape preferences, expectations from the real "experience of observations" of respondents (the earlier opportunity to visit one or another object during life), characterized by positive dynamics, however, lacking any close relationship ($r = 0.3700$).

Table 1 presents the results of research on aesthetic-consumer parameters for one of the previously identified spatio-temporal forms.

An important point is the definition of the landscape-forming role of individual elements of the environment. For this purpose, each natural element of the environment (field / meadow, forest, park, garden, solitary plants, river,

pond / lake, relief forms) is assigned the appropriate place, depending on the value of the coefficient of representation.

The results of the analysis of the landscape-forming role of individual landscape elements do not differ from the generally accepted ones and confirm that vegetation (forest, park, garden, solitary plants) and water objects (river, pond / lake) are the most attractive and at the same time most memorable from an aesthetic point of view.

Analysis of the results of the representation of elements of the environment showed that in the 27 (child representation) and in 23 (preferred landscape) settlements the first place belongs to the forest massif. The second place in 16 and 20 settlements belongs to the river.

Table-1. A fragment of the table "Frequency of mentioning environmental elements (in fractions of a unit) in rural settlements by the respondents in terms of types of observed landscape"

Types of settlements and examples	Representation factor (unit fraction)									
	field / meadow	forest area	park	garden	vegetable garden	single plants	river	pond / lake	forms of relief	KPN
Cities	0.05± 0.02	0.05± 0.04	0.04± 0.02	0.06± 0.04	0.03± 0.03	0.08± 0.03	0.04± 0.03	0.01± 0.01	0.02± 0.02	0.37± 0.09
Belgorod	0.04	0.02	0.06	0.06	0.06	0.11	0.05	0	0.03	0.43
Urban settlements	0.04± 0.02	0.05± 0.04	0.02± 0.03	0.09± 0.08	0.06± 0.02	0.08± 0.05	0.01± 0.01	0.02± 0.02	0.01± 0.01	0.36± 0.15
village of Krasnaya Yaruga	0.06	0.02	0	0.20	0.07	0.14	0	0.03	0	0.52
Rural settlements	0.13± 0.09	0.08± 0.09	0.01± 0.02	0.12± 0.10	0.06± 0.04	0.09± 0.06	0.04± 0.04	0.02± 0.03	0.03± 0.04	0.58± 0.15
village of Krutoy Log	0.10	0.06	0.03	0.04	0.08	0.20	0.01	0	0.15	0.67
All settlements	0.10± 0.08	0.07± 0.08	0.01± 0.02	0.11± 0.10	0.06± 0.04	0.09± 0.05	0.03± 0.04	0.02± 0.03	0.02± 0.04	0.51± 0.18

Note: Kpn is the coefficient of total representation of natural objects.

The amplitude of fluctuations in the significance (location) of some elements is insignificant: a forest, a river, a pond / lake, while the role of other objects varies significantly in different settlements, which is especially characteristic of a park landscaped in urban and large rural settlements, as well as fields / meadows (Shatilova et al., 2018).

Thus, we may note bi-directional differences: intra-component differences (for example, if the vegetation is generally assessed high, there are differences in estimates of forest, park, garden and single vegetation) and intraregional differences due to geographical conditions of residence and, accordingly, the level of representation of objects; quantitative characteristics of the studied settlements; socio-demographic characteristics, etc.

Evaluation of aesthetic-consumer parameters should be carried out subject to external landscape diversity, which is characterized by a combination of different landscapes and their interrelations. The results of the study showed that the most valuable are the following sets of landscape components: 1) water (river, lake) - forest (park / garden); 2) forest - field / meadow; 3) water - field / meadow. That is, the most attractive are the marginal zones (the junction of different environments).

Cluster analysis of research results of aesthetic-consumer parameters of the environment. Analysis of the results of research on the aesthetic and consumer parameters of the environment has shown that the division of settlements into three categories (urban, transitional, rural) in the studied aspect is conditional. The corresponding classification is more complex and requires more detailed statistical analysis. In order to identify, based on the survey data, some real relationships of features and classify them further, the use of the cluster analysis procedure is optimal.

When analyzing an array of data consisting of 57 objects (populated areas), each of them was characterized by 8 signs - the aesthetic-consumer parameters of the regional environment:

Block 1 (4 indicators): Coefficient of representation of the forest, park / garden, water bodies, field / meadow;

Block 2: The total coefficient of the representation of natural objects;

Block 3: Coefficient of positive representation of the observed objects;

Block 4: Coefficient of preference for the observed landscape;

Block 5: The total coefficient of recreational use of nature objects.

All settlements were distributed among six clusters, characterized by different values of the indicators making the basis of the clustering.

The calculations and analysis made it possible to establish that the aesthetic-consumer parameters of the environment have significant intraregional differences, due, first of all, to geographical living conditions, and, accordingly, the level of representation (frequency of occurrence) of landscape-forming elements; quantitative characteristics of the studied settlements (area of the territory) and socio-demographic characteristics (number of inhabitants, population density, the share of indigenous and visiting residents, average age of residents, length of residence in the settlement and frequency of change of residence, way of life), etc. First of all, differences are

observed in different types of settlements, and the administrative-territorial division and functional features strengthen and consolidate them. For example, these circumstances can explain higher estimates of aesthetic-consumer parameters in large cities. On the one hand, the urban environment is perceived at the level of not the entire city, but of the microdistrict; on the other hand, it is characterized by a considerable degree of livability, respectively, the ability to satisfy a number of needs, including aesthetic, that correspond to the urban lifestyle.

Within the settlement and its immediate vicinity lots of attractive forms of recreation are carried out, and the behavior of the recreants is regulated based on their own considerations. Important advantages are the

possibility of fragmentary implementation of recreational needs, when the person has limited free time and most types of recreation become free. Therefore, one of the studied aspects of recreational research should be the identification of preferred objects for recreation and the calculation of the recreational load experienced by them. The most important, as we think, is the study of the nature of connections between groups of holidaymakers and natural complexes, depending on a number of factors, including the selectivity of holidaymakers to elements of natural complexes and their combinations.

The study revealed a number of dependencies, including the frequency of visits from the radii of public nature management (Fig. 1). The results of calculating the recreational load on the areas of settlements of the Belgorod region are presented in Table 2.

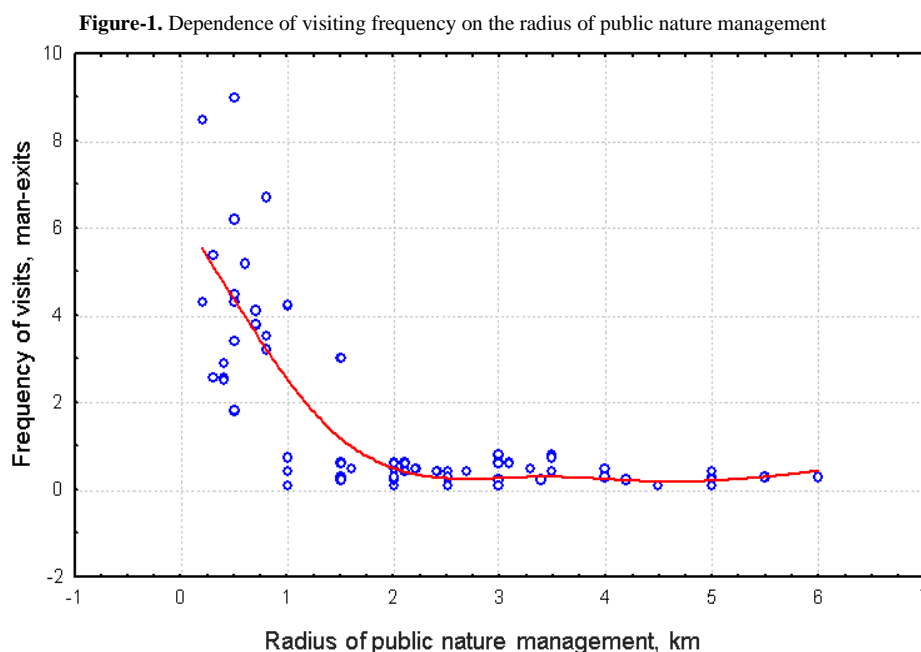


Table-2. A fragment of the table "Calculation of the recreational load on the areas of settlements of the Belgorod region"

No.	Examples of different types of settlements	The number of opinions on the possible recreational use by group (number of exits)				Recreational load on the area, man-exits per year/ha
		1-4 times per month ($N_1 \times T_1$)	3-4 times every six months ($N_2 \times T_2$)	1-2 times per year ($N_3 \times T_3$)	Total $\sum_{i=1}^n N_i \times T_i$	
1	Belgorod	1900032	820771	171430.5	2892234	46.99
2	Gubkin	619800	220906	34437	875143	14.22
3	village of Proletarsky	116232	9611	1302	127145	2.07
4	village of Krasnaya Yaruga	83760	10108	3250.5	97118.5	1.58
5	village of Krutoy Log	17688	6244	697.5	24629.5	0.40
6	village of Kurasovka	4200	5138	420	9758	0.16

4. Conclusion

As a result of the study, the structure of the aesthetic preferences and needs of the population was identified, the results of the assessment and the calculated aesthetic-consumer parameters of the environment (representation coefficients of objects), quantitative characteristics of the recreational load on the territory and individual objects were obtained. The identified spatial differences and factors of territorial differentiation of the aesthetic-consumer environmental parameters at the regional level are taken as and form the basis of the corresponding classification of human settlements.

The results of assessing the aesthetic-consumer environmental parameters allow us to propose a number of common key points for planning and organizing rational settlement land structures, the regional settlement system of the Belgorod region and the mapping methodology for assessing the consumer parameter of a region.

5. Summary

As a main conclusion, we should emphasize once again that, despite a number of difficulties arising in assessing the aesthetic and consumer parameters of the environment, one of the central places should be given to the aesthetic approach to the territory planning. Evaluation of aesthetic and consumer parameters will allow revealing the recreational potential of the territory, developing a system of design and economic decisions on the territorial arrangement of the region.

References

- Bunting, T. E. and Guelke, L. (1979). Behavioral and perception geography, A critical appraisal. *Annals of the Association of American Geographers*, 69(3): 448-62.
- Eringis, K. I. and Boudrunas, A. R. (1968). *Aesthetic resources of the landscape of Lithuania*. The schematic map. Vilnius.
- Frolova, M. Y. (1994). Ocenka isteticheskikh dostoinstv prirodniy landshavtov, Estimation of aesthetic advantages of natural landscapes. *Vestnik Moskovskogo universiteta, Geography*, 5(2): 30-33.
- Kane, P. S. (1981). Assessing landscape attractiveness, A comparative test of two new methods. *Applied Geography*, 1(2): 77-96.
- Linton, D. L. (1968). The assessment of scenery as a natural resource. *Scottish Geographical Magazine*, 84(3): 219-38.
- Lopina, E. M. and Kornilov, A. G. (2015). *Estimation of aesthetic and consumer parameters of the environment*. Publishing House Belgorod of the National University of BelSU: Belgorod. 102.
- Lopina, E. M. and Kornilov, A. G. (2016). Environment at the regional level. *International Business Management*, 10(16): 3364-68.
- Lutz, G., Trautmann, J. and Tricart, J. (1982). Bibliographie analytique des publications de télédétection du gts (groupe de recherche en télédétection radiométrique de strasbourg) relatives au milieu naturel. In *Annales de Géographie. Armand Colin*, 91(505): 356-63.
- Nikolaev, V. A. (2006). The landscape as an aesthetic phenomenon. Materials of the xi international landscape conference landscape science, Theory, Methods, Regional studies, Practice. M. *Geographical Faculty of Moscow State University*: 711-13.0308-7630611.
- Rushton, G. (1979). On behavioral and perception geography.
- Shatilova, L. M., Borisova, V. V. and Kasatkina, O. A. (2018). Representation of the linguistic and cultural concept lie. *French And Russian Language Picture of The World*, 34(85): 194-212.
- Vedenin, I. A. and Filippovich, A. S. (1975). Experience in the identification and mapping of landscape diversity of natural complexes. Geographical problems of the organization of tourism and recreation. 2.
- Антошкина, Е. В. and Фоменко, Е. В. (2013). Геологические процессы как лимитирующий фактор развития урбосистем. *Геология, география и глобальная энергия* (4): 175-82.