

## The history of creation of recreation units in Samara

Vsevolod Aleksandrovich Shabanov and Anna Vsevolodovna Shabanova

Samara State University of Architecture and Civil Engineering, Molodogavardeyskaya str., 194, Samara, Russia

**Abstract.** The paper presents results of a study of the process of creating recreational units in Samara. Initial data is cartographic material of 1804-2014 period. For twelve units ways of transformation from practical use to recreation were analyzed. By using cluster analysis methods the dynamics of changes of recreational units from 1970 to 2014 was evaluated. It was shown that some recreation units acquired additional recreational functions.

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### Introduction

Urban recreational facilities play a vital role in maintaining the health of the townspeople [1].

The most studied aspects of the existence and operation of urban recreational units are environmental, such as species diversity and rehabilitation measures. Thus, in [2] plant communities developed in an urban recreation area are discussed. Stability land of topsoil vegetation in urban recreational units is studied in [3]. The objects of study are not only parks and protected areas, but also urban areas, the state and the characteristics of their greenery. [4] Water bodies of urban recreation units are of particular interest, because the including into urban area leads to a change in surface runoff [5] and species diversity [6]. However, the history of the system of urban recreational facilities of a particular city, its formation and development, are rarely studied. Of great interest is the study of the transformation, which undergo recreational areas as a result of changes in functional zoning and reorganizing of the urban landscape.

### Research methods

We estimated how varied the set of functions and their sum of relatively large recreational units, for a period of nearly forty years. There was used cartographic material for available 1978 and 2014. Despite the fact that there are maps, plans and diagrams of Samara dating to 1927, 1935 and 1940, These were not included: they depict only the central part of the city, without settlements, which were subsequently assimilated with the city.

On the map dating back to 1970 we have identified twelve areas of recreational value: public gardens (street Artsybushevskaya. Kuibyshev Square, Revolution Square), Strukovsky Garden, Botanical Garden, Zagorodny Park, two garden-farms, Tomashev Kolok settlement, Jablonka settlement and settlement facilities relating to the Planning and the Pedagogical Institutes.

The matrices describing the state (set of functions) of recreational units in 1970 and 2014 were composed. Also the so-called change matrix was obtained by subtracting matricae that shows some functions lost, and some acquired during the study period. Processing of the results was carried out in Maple.

### Results and discussion

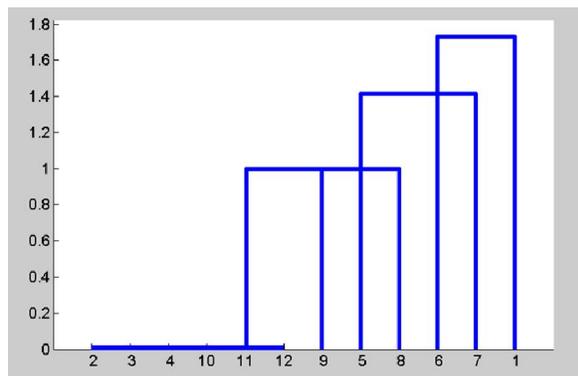
We compared recreational units using the following criteria: the presence of ponds, the presence of springs, forest plantations, orchards, year-round recreational activities, urban recreational facility, holiday villages, organized recreation units, unorganized recreation units, economic use.

Ponds are quite common for Samara. The earliest are marked on the plan of the city in 1897, but now the oldest ones have been built up. However, pond is always the focal point of the recreation unit. Seven of the twelve sites in study have one or more ponds. There were found only two springs. Plantations are often remnants of forests (groves or "koloks"), included in the city limits, thus explaining the presence of centenarians willows, lindens and oaks on the territory of modern urban recreation units. Afterwards plantations were partially reconstructed and renewed by self-sown greenery [7]. Orchards were an integral part of old Samara. From the 1860s to the 1930s there were the so-called Molokan Gardens (later built up area). On the plan of 1897 the total area of orchards is 766 tithes (836 ha), i.e. 10% of urban areas.

Mode of use - during one season or year-round - is an important characteristic of the recreation unit. May be noted that the number of units with year-round mode of use gradually increases due to the growing needs of the city in such territories. Status of an urban recreation unit implies improvement facilities, road and path network, etc., that differs it from unorganized recreation unit. A special place is occupied by holiday villages. At the

same time, some of these territories and located on them ponds perform and economic function, rather than a purely recreational. This is typical for the territories of low-rise buildings, for example, villages included in the city limits.

The trend of changes in the functions of recreation units [8] is presented by dendrogram (Figure).



**Figure 1. Dendrogram of changes in the functions of recreational facilities from 1970 to 2014**

1 - the Voronezhskiy Ozer Park (garden-farm # 1)  
 2 - Strukovsky garden;  
 3 - Botanical Garden, 4 - Country Park, 5 - Tomashev kolok (street Novovokzalnaya / Karl Marx)  
 6 - Garden-farm # 2, 7 - Jablonka settlement;  
 8 - Planning Institute; 9 - Pedagogical Institute, 10 - Public Garden at Revolution Square, 11 - Public Gardens at Kuibyshev Square, 12 - Public Gardens at Artsibushevskaya street

Half of studied territories (points 2, 3, 4, 10, 11, 12) have not been changed in the reporting period. All of them are parks or public gardens, marked on the plans of the city since 1935 (and Strukovsky Garden – in 1894). Gardens and parks undergo relatively high recreational load - 10 persons/ha for parks and 50 – for public gardens - and have a well-developed road network. Thus, in this group there are long-fledged objects of organized recreation, which acquired its shape before 1970 and keep it unchanged. They can be considered as the end point of transformation of recreation area in the city: well-developed road network, usage mode - close to transit, natural objects are represented only with vegetation. The Botanical Garden is characterized by the greatest possible number of implemented features, excluding only the economic use and organized recreation. However, the functions remained unchanged due to the park's status of protected area. In contrast to it other parks and public gardens typical have very small set of features: the presence of green space, the object of organized recreation and year-round use.

Significant changes are characteristic for the next group of objects - 9, 5, 8. They are characterized by the presence of ponds that are the focus of this recreation unit. They gradually acquire the features of urban recreation unit and lose economic use. This is particularly true for areas of the Pedagogical Institute and the Planning Institute. They are examples of a peculiar type of urban recreation unit. It originated in the 1960s [9]. Its characteristic features are:

1. involvement in a multi-storey residential area;
2. area - less than 1 ha;
3. there is usually a pond;
4. used by residents of nearby many-storied buildings mainly for walking, at least - for sports games (if recreation ground exists).

Tomashev Kolok still has some economic use population of nearby low building. As in the general layout of Samara it is marked as area of low building of individual houses with garden plots [10], we can assume that this situation will continue for a long time.

The third group is formed by objects 6 and 7. Both of these territories until 1970 were orchards used for recreation and unorganized recreation on numerous cottages and summer camps on the banks of the Volga. A common feature of many of these areas is pond, originally used for watering of gardens, and later – as centers of recreation units. Now orchards are destroyed, the area is almost completely developed, and some surviving ponds are objects of unorganized recreation. Changes in the neighborhood lead to pollution and shoaling of waters [11], and in the near future some of them will disappear. However, they are important for the city not only as a recreation resource, but also as an object of ecological education [12].

Maximum changes are characteristic of the Voronezhskiy Ozer Park (garden farm #1). This area in their functions for 1970 is close to objects 6 and 7. It is also a former orchard. Ponds were used for farming purposes and unorganized recreation. By 2010, this territory obtained the status of protected area and actually became an urban recreation unit with year-round regime. This area has [13] a wide range of recreation pursuits - three to four times greater than that of residential area recreation unit. Probably the Voronezhskiy Ozer Park will change slightly over time, due to the status a protected area.

## Conclusions

By means of cluster analysis dynamics of functionalities of recreation units in Samara was evaluated for the period from 1970 to 2014. As shown by a comparative analysis of the status and functionalities, for twelve recreation units in study at

least three possible scenarios of development were determined. First – to maintain the existing set of functions by regulating of recreational activities and nature-conserving measures, which is typical for parks, gardens and protected areas. The second – to increase a range of functions. This occurs if the territory is losing economic use and is reasonably managed as a recreation unit. Third - the loss functions due to the uncontrolled pollution and depletion of environmental components in the area.

### Conclusion

City a living, growing organism. Number of recreation units and their status is largely determined by the trends that are specific for the historical era in urban planning, environmental engineering and other industries associated with the transformation of the urban landscape.

### Corresponding Author:

Dr. Shabanov Vsevolod Aleksandrovich  
Samara State University of Architecture and Civil Engineering  
Molodogavardeyskaya str., 194, Samara, Russia

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