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университет имени К.Э. Циолковского  
Московский государственный университет  
имени М.В. Ломоносова  
Российская Академия естественных наук  
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# **АКТУАЛЬНЫЕ ПРОБЛЕМЫ СОВРЕМЕННОГО ЕСТЕСТВОЗНАНИЯ**

**Материалы 3-й Международной конференции  
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Научный редактор:  
д.ф.-м.н., академик РАЕН **К.Г. Никифоров**

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## TO THE NEW STRATEGY OF URBANIZED ENVIRONMENT OPTIMIZATION

I.L. Bukharina

Izhevsk State Agricultural Academy  
Izhevsk 426034 Russia, [buharin@udmlink.ru](mailto:buharin@udmlink.ru)

Анализ ассимиляционной активности зеленых насаждений показал, что они не способны оптимизировать экологическое состояние городской среды. Добиться существенного улучшения качества окружающей среды в крупных промышленных центрах можно за счет организации и управления ландшафтами пригородных территорий, создав на местах нарушенных сообществ и земель искусственные насаждения из функционально эффективных сортов и древесных пород.

One of nowadays popular directions in optimization of urban ecosystems is formation and realization of projects of so-called "ecological skeleton". There are many definitions of the term "ecological skeleton", the essence of them is reduced to the spatial and functional organization of city territory so that the ecological mode in city favored to improvement of quality of the city environment. This idea is considered by us with reference to Izhevsk, a large Ural industrial centre with the population over 640 thousand people.

Undoubtedly, a primary factor regulating the environment in urban ecosystems is green plantings. In this connection we have carried out researches of photosynthetic activity of trees, bushes and grassy cover in various types of plantings which have shown that it is far from sufficiency for providing the city environment with necessary amount of oxygen. Deficiency of oxygen will be rather high even when one city-dweller will have more than 20qm of wood plantings area. Adverse ecological conditions affect physiology-biochemical condition of plants which are functionally weakened in urbanized environment and as it is established by us with reference to Izhevsk, acquire only the fifth part of carbonic acid produced by the city. Because of housing density great number of sources of atmosphere, water and ground pollution (industrial and municipal enterprises, transport, thermal power stations etc), green plantings are not capable to make quality of atmospheric air, underground and superficial waters normal, to protect ground from pollution by heavy metals and other ecologically harmful chemical components.

As the city is not capable to improve environment quality essentially relying on its own ecological reserves, so it looks expedient "to resort" to the help of ecological "donors" – natural and natural-anthropogenesis ecosystems of out-of-town, first of all suburban, territories (Odum, 1986; Tuganaev, Bukharina, 2005). Calculations of environment regulating potential of suburban territories based on analysis of available materials about the areas taken by various communities, including woods of green zone of the city ( in view of their specific

structure, age and vital condition, photosynthetic activity of the basic tree species) are led by us. They have shown that suburban ecosystems are not capable to provide the city adequately even with oxygen. The reason for that is not only the percent of ruined communities and grounds but low functional efficiency of the basic "donors" (wood and grassy plants). In this connection we consider expedient to create artificial plantings from functionally effective grades of grassy plants and wood species instead of ruined vegetative communities. There are such species and grades in assortment of plants that are recommended for landscaping (gardening) and use in artificial plantings (including the species used in gardening in Izhevsk), and in case of emergency it will be rather easy for selectors, who use modern technologies, to create them. In this case the landscape of suburban territories will be the optimized combination of agro-, dendro- and natural ecosystems. The latter can exist as the especially protected territories which size can increase in a centrifugal direction from the city. Thus it is possible to stabilize the further degradation of natural ecosystems.

Realization of the stated idea in practice will serve as one more proof of correctness of V.I. Vernadsky's ideas about transformation of biosphere in noosphere (Vernadsky, 1977). Any kind (including human-beings) is historically and biologically significant if it contributes to the conditions favorable for biota existence on the Earth (Lovelock, 1991). Instead of looking at rapidly collapsing natural ecosystems isn't it more expedient to try to order and operate this chaos?

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