ECOLOGICAL COMPONENT OF ADVENTIVE ELEMENT OF KHARKIV URBAN FLORA (UKRAINE)

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Adventive plant species cause changes in all structures of urban flora, including ecological. The expansion of the range of habitats and the strengthening of the role of adventive plants in the structure of plant communities indicates an increase of invasive potential of introduced species over the years.

The ecological analysis of adventive fraction of Kharkiv urban flora was processed using the classifications of R. Wittig et al. (degree of
urbanization) [6, p. 265–282] and J. Jalas (degree of hemerobia) [4, p. 1-15]. Analysis of distribution of adventive plant species in the vegetation classes was performed by processing geobotanical descriptions of urban vegetation in the programs Turboveg 2.91 [3, 78 p.] and Juice 7.0.127 [5, 98 p.]. The obtained phytocenones have been identified by Prodrome of The Vegetation of Ukraine [2, 784 p.], habitat types – by National Habitat Catalogue of Ukraine [1, 442 p.].

After analyzing the adventive plant species by distribution, we have found that 136 species (39.7%) occur sporadically throughout the city and represent a stable component of transformed habitats. The distribution of other species of adventive plants is as follows: 69 plant species (20%) grow locally in some parts of the city, 62 plantspecies (17.9%) are widespread in the city, 78 plant species (22.3%) was accidentally found (from 2 to 5 localities).

The distribution of adventive plant species according to the city zoning shows the predominance of plants of urban and suburban zones (208 species; 60.6%). We have found 94 plant species (27%) of urban zone that grow exclusively in synanthropicecotopes. Other 43 plant species (12.4%) have been found in the city outskirts with a decrease in the degree of urbanization. Thus, we note an increase in number of adventive plants from the periphery to the city center, where the main centers of introdution are located.


To determine the participation of species by the degree of hemerobia [2, p. 1–15], all non-native species were divided according to their occurrence in anthropogenic ecosystems. The majority of species (106; 30.6%) belong to the group of meso-, eugemobes (Alcea rosea L.,
Amaranthus albus L. etc.). They are the components of flora with a high degree of anthropogenic load. Euhemerobes (87 species; 25%) and mesohemerobes (82; 23.8%) associate with transformed ecosystems and culture phytocenoses (Bryonia alba L., Fraxinus pennsylvanica Marshall, Aristolochia clematitidis L., Fumaria schleicheri Soy.-Willem., Ligustrum vulgare L., Rosa rugosa Thunb. etc.). The areas of the city with human activity as a limiting factor are centers of expansion of adventive plant species or formation of synantropic plant communities. Such species are part of meso-, eu-, polyhemerobes (30; 8.8%) and polyhemerobes (15; 4.4%) groups. They grow on anthropogenically transformed ecotopes in the urban zone (Acer negundo L., Parthenocissus inserta (A. Kern.) R. M. Fritsch, Consolida regalis S.F. Gray, Cannabis ruderalis Janisch. etc.). In areas within significant human impact on ecosystem, we found few adventive plant species (Oenothera rubricaulis Klebahn., Vicia villosa Rothetc.). The explanation may be increase of oligohemerobes (12; 3.5%) in the city’s suburban zone. Other groups are oligo-, mesohemerobes (11 species; 3.2%), eu-, polyhemerobes (1 species; 0.3%) and meso-, oligohemerobes (1 species; 0.3%). The conducted research of degree of hemerobicity of the adventive fraction of urban flora confirmed the high level of transformation and urbanization of the city’s flora. All groups of hemerobia are typical for ecosystems with active or weak human activity. In particular, this is confirmed by the absence of stenotic group of ahemerobes, which represents only natural ecosystems.

References:
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