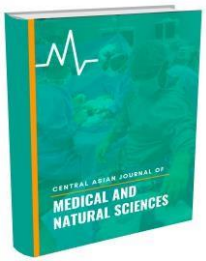

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Article

Analysing Some Dominant and Subdominant Species in the Urban Flora of Andijan City

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Abstract: This article provides information on the families belonging to the autochthonous fraction distributed in the urban flora of Andijan city, their genus, number of species, distribution, dominant plants in the spring and autumn synusia, and their current status. Geographical and biomorphological analysis of autochthonous species found in Urbanoflora is presented. Based on the herbarium specimens collected in the conducted field research and stored in the fund of the National Herbarium of Uzbekistan (TASH), it was found that 47 families, 355 species of tall plants belonging to 218 genera are found in the urban flora of Andijan city.

Keywords: autochthonous fraction, genus, number of species, distribution, geographical and biomorphological analysis

1. Introduction

Nowadays, one of the main features of the evolution of plants is the increasing process of anthropogenic transformation, where natural phytocenoses are replaced by species resistant to anthropogenic influence. This situation leads to a decrease in the autochthonous composition of natural species. Especially in the urban ecosystem, where the artificial ecotopes are formed, the diversity of species and their habitats will significantly change. As a result, the composition and density of non-native species increases, and the intensity of phytocenotic relations between them and autochthonous species increases. This in turn affects the population dynamics of autochthonous species [1], [2].

The conducted studies showed that in recent years, the territorial expansion of Andijan city, the construction of new buildings and structures, and the increase in the number of motor vehicles led to a sharp change in the population of autochthonous species in the urban flora [3].

2. Materials and Methods

This study employed established floristic research methods to investigate the vegetation of Andijan city over the period from 2019 to 2023, encompassing various stages of the growing season. Fieldwork was conducted using systematic routes across the city, ensuring comprehensive coverage of different habitats. Plant specimens were collected using standardized methods, and detailed floristic descriptions were recorded for each specimen. Additionally, special attention was given to studying the occurrence and abundance of invasive plant species within distinct habitats [4].

The primary objective of each field survey was to assess the composition of the flora using quadrats, collecting herbarium specimens, and maintaining detailed field diaries. A

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key aspect of the methodology was to visit each of the 142 designated squares within the city at least once, aligning with the principles of grid system mapping. This approach ensured representative sampling across the entire study area [5].

Taxonomic information, including scientific names of families, genera, and species, was referenced from the International Plant Names Index (www.ipni.org) [6], and modern species names were cross-referenced with The World Plants Catalog of Life [7]. Taxonomic authorities for plant names were determined based on established manuals [8].

To enhance the spatial accuracy of the study, Google Earth coordinates were recorded for each species' growth locations, facilitating precise mapping and future research endeavors. These coordinates were integrated into the dataset for comprehensive spatial analysis.

Overall, this study adhered to accepted floristic research standards and methodologies, employing systematic sampling techniques and utilizing authoritative taxonomic references to ensure the reliability and reproducibility of the findings.

3. Results and Discussion

Autochthonous species of the urban flora of Andijan city were analyzed for the first time based on the materials collected during the research. The conducted research showed that 63.66% of the existing species (226 species) were found to be autochthonous species. The fact that 83 species of the identified autochthonous species belong to the Liliopsida class was explained by the fact that monocotyledonous plants resistant to stress factors are more common in the urban ecosystem [5].

The class Liliopsida (Mononcotyledones), which is the leader in terms of distribution, includes such families as Poaceae, Liliaceae, Ixioliriaceae, Cyperaceae, and Typhaceae. Several scientists have given information about representatives of this class in their works. The class Liliopsida, which is widespread in the territory of our republic and stands out among plants by its uniqueness, includes 4 ancestors, 37 tribes, 104 families, and about 6300 species belonging to 300 genera. is a class containing plants [9].

In the area of the studied city, the leading families in terms of the number of species and types of plants belonging to the Liliopsida class of flora were identified.

According to “Flora Uzbekistana”, the Ixioliriaceae Nakai family includes only two species belonging to one family. When the urban flora of Andijan city was studied, only one species of this family, for example, *Ixiolirion tataricum* (Pall.) Schult. et Schult (Tatar Chuchmoma) was found to meet. In Urbanoflora, herbarium specimens of this species were collected from the "Dostlik" cemetery located in the northern small dacha. Tatar sedge (*Ixiolirion tataricum*) is a perennial, medicinal and ornamental plant that reproduces rapidly mainly through bulbs [3].

Cyperaceae Juss autochthonous species such as Bolboschoenus maritimus, Fimbristylis dichotoma belonging to the family can be found. The lack of natural water bodies or running water in the urban area is one of the main reasons for the low distribution of these species in the urban flora.

It is known that Liliaceae Juss. Most of the species belonging to the family are geophytic plants. Since representatives of the family are mainly ephemeroid ornamental plants, they are rarely found in urban flora. The species of Gagea (3) and Tulipa (2) species belonging to Liliaceae family were collected from Bogishamol hills of Andijan city [10]. The unique Gagea ova was collected for the first time from the territory of the Andijan-Namangan railway belonging to the city of Andijan.

Poaceae is one of the leading families in the flora of Uzbekistan. Species belonging to this family are leaders in the urban flora due to their high adaptive properties to stress factors (32 species, 75%). Species of the family such as Hordeum spontaneum, Poa bulbosa, P. pratensis, Bromus popovii, etc. are very common in Andijan urban flora [11].

Based on the sources, it was determined that some autochthonous monocotyledonous plants identified in the flora of Andijan city belong to different ecological groups in relation to humidity.

Among the autochthonous monocot species of Andijan city, the Poaceae family dominates in terms of distribution.

In addition, autochthonous species were dominant or subdominant depending on the season in Andijan city streets, alleys and apartment buildings, in some abandoned places near water, lawns and irrigated lands. Among such species, there are relatively more autochthonous species. During the observations, the dominance of the species differed depending on the season in the spring and autumn sinuses.

Figure 1. Biotope of the plant species *Strigosella trichocarpa*

In sinusium of spring, species with a short growing season: *Asperugo procumbens, Lamium amplexicaule, Papaver pavoninum, Poa bulbosa, Hypecoum parviflorum, Strigosella trichocarpa, Roemeria refracta, Olimarabidopsis pumila* dominated for a short period of time.

Subdominant species: species such as *Aegilops triuncialis, Ceratocephala falcata, Poa annua, Chorispora tenella, Descurainia sophia, Glycyrrhiza glabra* are on the second level in each observation area, and the occurrence of individuals is less.

Dominant species during sinus of the autumn season: *Atriplex aucheri, Heliotropium ellipticum, Alhagi canescens, A. pseudalhagi, Melissa officinalis, Mentha longifolia* var. *asiatica, Phragmites* australis species.

Figure 2. Biotope of the plant species *Holosteum umbellatum*

It was found out that the subdominant species in the autumn sinusia of the study area are *Plantago major* L., *Artemisia absinthium* L. *Holosteum umbellatum* and other species.

According to the analysis of the place of autochthonous species in the urban flora of Andijan, this type of species forms the basis of the urban flora. One of the main reasons for this was explained by the quality of the area and its inclusion in the list of horizontal, i.e. wide-growing cities in urban planning. In our research, we observed cases of dominance of certain species on roadsides, alleys, and neglected areas. We will briefly touch on them.

Papaver pavoninum Schrenk., *Asperugo procumbens* L. dominates for a short time mainly in abandoned areas, areas between highways (new ring road), areas prepared for lawns, and then gives way to other species.

Lamium amplexicaule L., *Poa bulbosa* L., these species were observed to dominate newly planted lawned areas, avenues and around buildings.

Alhagi canescens (Regel) Shap. ex Keller & Shap., *Alhagi pseudalhagi* (M.Bieb.) Desv. ex Wangerin. The flowering season of this species corresponds to the autumn sinus. It is a subdominant species in the community.

Chorispora tenella (Pall.) DC. The plant species was considered to be a cosmopolitan species found almost everywhere. The predominance of sine wave is observed in all regions on roadsides, abandoned places and places where heat lines have passed. In our observations, there were many cases of meeting *Malva sylvestris* L. together with the species.

4. Conclusion

It can be said that the city of Andijan has a high anthropogenic pressure, and it can be seen that many negative factors affect the growth and development of autochthonous species found in the urban flora. This leads to the introduction of adventive species, and as a result, the population of autochthonous species decreases. We can see that the autochthonous species in the study area are mostly preserved in hills, along streams and canals, and in cemeteries.

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