American Journal Of Biomedical Science & Pharmaceutical Innovation

VOLUME Vol.05 Issue03 2025
PAGE NO. 29-32
DOI 10.37547/ajbspi/Volume05Issue03-07

Transformation of adventitious species into the urban flora of Samarkand

Gafurova Gulkhayo Shavkat kizi
PhD student, Samarkand State University, Samarkand, Uzbekistan

Received: 29 January 2025; **Accepted:** 28 February 2025; **Published:** 31 March 2025

Abstract: The article provides information about adventitious species that have recently rapidly entered the local flora. It has been determined that there are various factors in the penetration of adventitious species into other regions. Some adventitious plant species distributed in the urban area are presented. It is emphasized that anthropogenic factors, logistical connections, and the introduction of ornamental plants play a key role.

Keywords: Urban flora, adventive, floristics, field research, plants, species.

Introduction: The study of urban flora is one of the priority areas of modern floristics and phytogeography, and its scientific importance is increasing day by day due to the intensification of anthropogenic pressure both in time and space. In particular, as a result of the increase in the level of urbanization in our republic in recent years, the rapid development of tourism, logistics and economic sectors, 82% of the natural landscape of the territory of Uzbekistan has been affected by anthropogenic factors, and 18% has been completely mastered. As a result of the intensification of anthropogenic impact, determining the composition of urban flora in the country's natural and artificial landscapes, protecting rare species, maintaining a register of adventive species, and studying their impact on urban biodiversity are of important scientific and practical importance [1].

Anthropogenic changes in natural flora are explained by the rapid growth of plants. Over the past 20 years, the process of adventitia of flora has been enriching the composition of natural flora with new species. This situation has become especially noticeable in urban flora. When studying the composition of various urban floras, one can see a high concentration of specific species [2].

Alien plants enter territories in various ways. Although common features of the introduction of these species have been observed, they differ depending on the geographical location of the territories, climatic conditions, socio-economic relations, tourism potential and other factors. Numerous studies on the trends of change of adventitious species in urban flora.[3] (Grossheim, 1936; Vyunkova, 1985; Richardson, 2000; Pyshek et al., 1995)

It is shown that random plants penetrate in different directions, but no special system has been developed for them.

When identifying many new plants, researchers emphasize that they are "alien species" for the studied area and that their origin is associated with economic activity. A.A. Grossheim (Grossheim, 1936) and N.A. Vyunkova (Vyunkova, 1985) emphasize that the appearance of adventitious plants in other areas is not a natural process of florogenesis, but the result of anthropogenic influence on the flora. At present, it is difficult to determine the time of introduction and origin of some adventitious species, most of which have adapted to the local flora or have become cosmopolitan species after spreading over great distances. From this perspective, it is difficult to distinguish between "native" and "alien" species.[4] (Richardson, 2000; Pysheket al, 1995; Carlton, 1996; Heywood, 1989). Such situations are currently being observed in our republic, especially in the urban flora of Samarkand, where the number of adventitious plants is increasing.

METHODS

It is planned to conduct research on the urban flora of Samarkand city in 2024-2026. As a result of field research in 2024, herbarium samples were obtained.

The collected herbarium samples are being identified based on scientific sources and the transformation processes of adventitious species have been identified. [5], [6]

RESULTS AND DISCUSSION

In 2024, field research was conducted on the urban flora of Samarkand. A grid-system map was determined, divided into 174 indexes, on which field research was carried out. Research was conducted in 67 indexes out of a total of 174 indexes. As a result of the research, more than 3000 herbarium specimens of plants were collected. Field research is currently ongoing. When analyzing the collected plants, adventitious plants were recorded in them.

The following criteria were used to identify these species: to be an adventive species, it must have at least one of the following characteristics [7]. a) the area where the species is found must be far from its original distribution zone; b) the new species found must not have been found in this area before; c) local conditions must not correspond to the ecological characteristics of the species; d) the place where the plant grows must be in an anthropogenic environment. To determine whether these species were introduced into the urban flora of Samarkand from abroad, the works of "Flora Uzbekistana" (Flora Uzbekistana, 1941-1963; 2016-2017; 2019), "Opredelitel rastenii Sredney Azii" (Opredelitel rastenii Sredney Azii, 1968-2015), H.Q. Esanov (Esanov and Usmonov, 2018; Esanov and Kechaykin, 2016; Esanov, 2017; Sennikov, 2018) were used.

However, at present there is no single classification of adventitious plant species. The variability of adventitious species is expanding due to the increase in the scale of anthropogenic factors. At the same time, methods of adaptation to their historically formed distribution, expansion of their range are noted based on modern trends (transport, tourism, trade, introduction of ornamental plants) [8].

Samarkand is one of the oldest cities in Uzbekistan, and is visited by more than a thousand foreign tourists from Europe and Asia every year. Species recorded as adventitious species in Samarkand are found in the central streets of the city, around hotels, educational institutions, markets, alleys and lawns. In the cities of Uzbekistan, especially in Samarkand, the transformation of adventitious species has been observed in three main ways:

1.Directly by people. The degree of influence of this factor is assessed by the fact that Samarkand is one of the major tourist centers and the geography of tourism. The natural growth areas of these plants are South and North America (Erigeron bonariensis L.), Central and Western Europe (Amaranthus viridis L.), They complement the list of species unintentionally brought by tourists. Currently, these species have been observed to be widespread in many areas of the city.

2. Rapid development of transport and logistics. The second factor is explained by the location of the study area (Samarkand city) in the center of the Great Silk Road and the dense network of modern logistics, as well as the connection of Samarkand city with the M39 international highway. This factor is the main means for the introduction of adventitious species such as Geranium pusillum L., Stizolophus balsamita (Lam.) Cass. ex Takht. It is the species Centaurea solstitialis L that was recorded in the vicinity of the M39 international highway.

3. Introduction of plant species into urban conditions. The third factor is the source of the rapid development and introduction of adventitious species in recent years. They are introduced into urban areas through the creation of new avenues or the introduction of species adapted to different natural and climatic conditions, as well as through turfing. Such species include Oxalis corniculata L., Rorippa sylvestris (L.) Besser. and others.

On August 25, 2007, the 2750th anniversary of the city of Samarkand was celebrated in our country. On this occasion, large-scale improvement work was carried out, cultural centers and parks were established.

Ornamental tree and shrub seedlings were brought from foreign countries for introduction to Samarkand. As a result, alien species have also entered this area (Samarkand city). In particular, Sonchus arvensis L., Trifolium campestre Schreb., Euphorbia helioscopia L., and others can be cited.

The Samarkand Summit of the Shanghai Cooperation Organization — the summit of the heads of state of the organization held in Samarkand on September 15-16, 2022. On the occasion of the SCO summit, along with new buildings, trees and seedlings have also increased in Samarkand. Two-thirds of the tourist center is occupied by the garden area, where more than 50 thousand roses, 30 thousand bushes and hundreds of thousands of shrubs from Germany, Belgium, Italy and the Netherlands have been planted. It can also be admitted that the summit has made Samarkand even greener. The current appearance of adventitious species such as Euphorbia peplus in the flora is associated with the arrival of various types of trees and shrubs from foreign countries, as well as numerous visits by tourists.

Representatives of the Amaranthus L. species are also widespread in the urban flora of Samarkand. Among them, Amaranthus viridis L. can be cited as an invasive

species [9]. Amaranthus viridis L. (Amaranthaceae) – a new invasive species for the flora of Uzbekistan. Austria. Stapfia Reports., 127-130, Erigeron bonariensis L. - this species is found not only in the urban flora, but also as a dominant species in other settlements.

Figure 1. General view of Erigeron bonariensis L.

Figure 2. General view of Amaranthus viridis L.

Currently, the introduction of invasive species into local flora is accelerating, and they are negatively affecting native species. Research is ongoing to study such situations.

CONCLUSION

In conclusion, the various effects of modern anthropogenic factors have accelerated the process of adventitious flora. This is especially evident in cities with well-developed socio-economic and logistical connections. The penetration of adventitious species into foreign territories is caused by human movements, transport, the introduction of ornamental plants, etc. This situation varies in different regions.

REFERENCES

G‘ulomov R.K ., Mutalibxonova M.F. NAMANGAN SHAHAR URBANOFLORASIDA TARQALGAN BIR URUG‘PALLALILAR https://doi.org/10.5281/zenodo.13863663

Pippen L, M., Luke, L., Lena, C., & S, S. (2021). Urban Plant Diversity: Understanding Informing Processes and Emerging Trends. Urban Ecology in the Global South, 145-168.

Гроссгейм, А. А. (1936). Анализ флоры Кавказа. Баку: 269 с.

Richardson, D. M., Pyšek, P., Rejmanek, M., Barbour, M. G., Panetta, F. D., &West, C. J. (2000).Naturalization and invasion of alien plants: concepts and definitions. Diversity and distributions., 2-6, 93-107

Флора Узбекистана. (2016-2017). Ташкент: Навруз, 1-2 т-х.

Флора Узбекистана. (2019). Ташкент: Манавият.

Флора Узбекистана. . (1941-1963). Ташкент: изд. АН УзССР: В 6 т-х.

Определитель растений Средней Азии. (1968-2015). Ташкент: Фан.

Майоров, С. Р., Бочкин, В. Д., Насимович, Ю. А., & Щербаков, А. (2012). Адвентивнаяфлора Москвы и Московской области. Москва: КМК.2. Аистова, Е.В. Адвентивная флора Амурской области. Автореф. канд. биол. наук. – 2007.

R.A. Uralov , A.J. Ibragimov The Way of Science. 2024. № 7 (125). 18-20

Esanov, H. K. (2017). Amaranthus viridis L. (Amaranthaceae) – a new invasive species for the flora of Uzbekistan. Austria. Stapfia Reports., 127-130

Umedov, A.M., Esanov, H.Q. “Markaziy Osiyoda biologik xilma-xillikni saqlash:muommolar, yechimlar va istiqbollari” NamDU. – 2024. – Pp. 28-30.

Esanov, H. Q., & Usmonov M, X. (2018). Two Alien Species of Asteraceae NewtoUzbekistan(Bukhara Oasis). Turczaninowia(21), 175-180.

Esanov, H. K., Kechaykin, A., & A. (2016). Duchesnea Indica (Andrews) Teschem. (RosaceaeJuss.)—New Adventive Species to the Flora of the Republic of Uzbekistan. Acta BiologicaSibirica,2,84-89.

Эсанов, Ҳ. Қ. (2017). Бухоро воҳаси флораси таҳлили.. Ташкент: Автореф. канд. биол. наук.

Sennikov, A. N., Sh, T. K., Beshko, N. Y., Esanov, H. K., Jenna, W. L., &Pagad, S. (2018).Global Register of Introduced and Invasive Species–Uzbekistan. Version 1, 10-18.

Carlton J, T. (1996). Patterns, process, and prediction in marine invasion ecology. Biol Conserv,97-106.

Pyšek, P., Prach, K., Rejmánek, M., & Wade M. (1995). Plant invasions - General aspectsandspecial problems. Amsterdam: SPB Academic Publ.