

UDC 582.724.3(477.87)

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DOI: 10.58407/bht.2.23.2

**ABSTRACT**

Brief overview is provided below concerning the distribution of various sycamore species within the region of Transcarpathia, along with the coexistence of other *Platanus* L. species and interspecific hybrids within this geographic area.

**The purpose** of the article is to study the species composition and distribution of species of the *Platanus* genus in Transcarpathia and the historical aspect of introduction, prospects for use in the landscaping of cities and villages of the Transcarpathian region.

**Methodology.** In the course of the study, the following methods were used: 1) a comparative-descriptive method of determining tree species; 2) a comparative genetic research method for the oldest tree of this genus in Transcarpathia – the «Drugeth sycamore».

**The research topic** involving the introduction of plane trees as exotic species holds undeniable significance. This importance stems from the intensive urbanization, the consistent rise in anthropogenic pressure on the biosphere, and the increasing levels of air pollution. These factors collectively contribute to the growing complexity of the ecological landscape, thereby emphasizing the pressing need for environmental conservation and protection.

**Scientific novelty.** Historically, plane trees were introduced in almost all cities of the Transcarpathian region. Until now, these trees are actively used to plant greenery in parks, squares and roadsides. A detailed dendrological study of certain species of exotics complements the floristic analysis of landscaping in the cities of Transcarpathia, which is currently carried out by scientists and special expert groups.

**Conclusions.** It's clear that the study of the genus *Platanus* in the Transcarpathian region is essential for understanding the species composition and distribution of these trees in the area. It's especially important to clarify the classification of sycamores to distinguish between different species and hybrids accurately. The identification of the «Drugeth sycamore» as *Platanus acerifolia* (Aiton) Willd. is a valuable contribution to understanding the local flora.

The conservation status of the «Drugeth sycamore» highlights its significance and the need for protective measures. Installing a fence around the tree and providing an informational and protective board are excellent suggestions to preserve and protect this ancient giant from potential harm. These measures would not only ensure its longevity but also educate the public about the importance of conserving such unique and historically significant trees. Further research and documentation of the genus *Platanus* in Transcarpathia will help in better managing and preserving these trees and enriching the local biodiversity. It's encouraging to see efforts aimed at understanding and protecting the natural heritage of the region.

Key words: introduced plants, *Platanus* L., Transcarpathia

**АНОТАЦІЯ**

Зроблено короткий огляд поширення різних видів платану на території Закарпаття і проаналізовано наявність у цьому регіоні інших видів та міжвидових гібридів роду *Platanus* L.

**Метою статті** є вивчення видового складу і поширення видів роду *Platanus* на Закарпатті та історичний аспект інтродукції, перспективи для використання в озелененні міст і сіл Закарпатської області.

**Методологія.** У ході дослідження використано такі методи: 1) порівняльно-описовий метод визначення видів дерев; 2) порівняльно-генетичний метод дослідження для найстарішого на Закарпатті дерева цього роду – платана «Другетів».

**Тема** дослідження, що торкається процесу та наслідків інтродукції платанів як дерев-екзотів, має незаперечну **актуальність**, адже внаслідок інтенсивної урбанізації життя з невпинним посиленням

антропогенного навантаження на біосферу та зростанням забруднення атмосферного повітря ускладнює екологічну ситуацію взагалі і, таким чином, порушує проблему охорони навколишнього середовища.

**Наукова новизна.** Історично платани були інтродуковані майже по всіх містах Закарпатської області. Дотепер цими деревами активно озеленюють парки, сквери й узбіччя доріг. Детальне дендрологічне дослідження окремих видів екзотів доповнює флористичний аналіз озеленення міст Закарпаття, що його проводять на сьогодні науковці та спеціальні експертні групи.

**Висновки.** Види і міжвидові гібриди роду *Platanus* ростуть майже по всіх містах Закарпаття, однак їхній видовий склад і поширення на Закарпатті потребує детальнішої перевірки. Зокрема, необхідне перевизначення всіх дерев, які у старих літературних джерелах належать до виду «платан західний».

Платан Другетів, що у парку Підзамковому, належить до виду *Platanus acerifolia* (Aiton) Willd. і має природоохоронний статус, але для його охорони потрібно вжити більше заходів, наприклад зробити навколо дерева огорожу, щоб відпочивальники не витоптували ґрунт у його підніжжі й, тим самим, не вкорочували віку цього гіганту, провести етикетування, встановити інформаційно-охоронний щит.

**Ключові слова:** Закарпаття, рослини-інтродуценти, *Platanus* L.

### Formulation of the problem

Amidst the multitude of exotic plants flourishing in the Transcarpathian region, the stately *Platanus* tree holds a prominent position. The moniker «sycamore» is derived from the Greek word signifying «broad», a reference to its leaves, which can reach widths of up to 25 cm (Simkin, 1982). This intriguing and visually captivating tree is affectionately known as the «shameful tree» in Transcarpathia due to its annual shedding of bark during the spring season.

The sycamore tree belongs to the Platanaceae family, with its sole contemporary genus encompassing 10 (or possibly 11) deciduous and evergreen species that inhabit the Northern Hemisphere. These species are distributed across regions such as the Mediterranean, North America, Central and Asia Minor, and both South-Western and Central Europe.

In accordance with modern taxonomic classifications, we can distinguish two primary progenitors: *Platanus orientalis* L. and *P. occidentalis* L. Additionally, there are several natural hybrid species, including the sycamore (*P. acerifolia* (Aiton) Willd.), wedge-shaped sycamore (*P. cuneata* Willd.), finger sycamore (*P. digitata* Gord.), Spanish sycamore (*P. hispanica* Münchh.) and others.

**Fossil records** have also documented various species of plane trees, including 1. *P. cuneiformis*, 2. *P. laevis*, 3. *P. beeri*, 4. *P. veleninskyana*, 5. *P. rugoides*, 6. *P. academiae*, 7. *P. aceroides*. (Ilyinskaya, 1968). Within the territory of Transcarpathia, paleontologists have unearthed fossilized remains and leaf imprints of *P. platanifolia*. These discoveries were made in the vicinity of Uzhhorod during the Pliocene period, as well as in the Tyachiv district (in the Badenian flora of Ganichi and Velyka Ugolka) (Mamchur, 2009).

It is noteworthy that the *Platan* genus had a widespread presence during the Cretaceous period and played a significant role in shaping the composition of forests, a fact highlighted by Kryshchovych in 1957. Additionally, the abundance of sycamore trees, specifically in the Ilynytsk

Formation, is noted, with occurrences aside from Berezhinka being limited to Uzhhorod, and even then, only as isolated leaf imprints (Ilyinskaya, 1968). An example of a fossil leaf imprint from a sycamore tree is preserved in the archives of the Transcarpathian Regional Museum of Local Lore, named after T. Legotsky (Bilanych, 2010).

Within the territorial boundaries of Ukraine, three distinct species of sycamore trees can be found: the eastern sycamore (*P. orientalis* L.), predominantly located in the southern regions of Ukraine, the western sycamore (*P. occidentalis* L.), and the maple-leaf sycamore (*P. acerifolia* (Aiton) Willd.).

Our primary objective was to investigate the species composition and distribution of species within the *Platanus* genus in Transcarpathia, while also delving into the historical context of their introduction and the potential for their utilization in urban and village landscaping within the Transcarpathian region.

This exotic tree species possesses the advantageous trait of being non-invasive, further enhancing its suitability for landscaping when compared to some other exotic species, which may exhibit invasive tendencies and are therefore not recommended for such purposes.

The relevance of our research stems from the pressing need to understand the processes and implications of introducing sycamores as exotic trees. With the relentless rise of urbanization, escalating anthropogenic pressures on the biosphere, and the growing levels of atmospheric air pollution, the overall ecological situation becomes increasingly complex. In addressing this challenge, considerable significance is placed on the introduction of plant species, a practice that enriches the biodiversity of our country's flora and contributes to environmental enhancement. However, not all plant species can be introduced and propagated, as many of them exhibit aggressive invasive characteristics. The *Platanus* genus, by contrast, is a prime example of exotics that can be effectively employed in urban landscaping due to its non-invasive nature.

Moreover, the relevance of our research topic is underscored by the essential role that parks, arboretums, and squares play in restoring, preserving, and augmenting the biodiversity of plant species in cities exposed to significant anthropogenic pressures (Zabrutka & Soyma, 2016). Hence, the examination of their species composition, historical origins, and development becomes a pivotal task.

In the latter part of the 20th century, Uzhhorod State University's botanist-scientists comprehensively covered the subject of exotics in Transcarpathia. However, in the 21st century, there has been a notable absence of new systematic investigations or dedicated sections focusing on individual introducer species, such as the sycamore. Presently, a team of experts from Uzhhorod National University (UzhNU) has been consistently conducting floristic analyses of the city's green spaces over several years. It is worth mentioning that a dedicated group of scientists in Uzhhorod, in collaboration with the city council, has been researching the flora of urban green areas (Hasynets et al., 2017; Soyma, 2011; Patskan & Soyma, 2016; Beseganych et al., 2020).

Our work's novelty lies in the in-depth exploration of each exotic species. This, in turn, complements the comprehensive floristic studies of green areas, allowing for a more detailed examination of the appearance, historical context, and role of these exotic species in the landscaping of cities and villages in Transcarpathia.

### Materials and methods

Throughout our scientific research, we employed the traditional comparative-descriptive method in plant morphology to identify tree species. However, a notable case of confusion arose in Uzhhorod's Pidzamkovyi Park regarding an ancient sycamore tree, nearly 400 years old. Initially, it was classified as a western sycamore (*P. occidentalis*), but modern data now suggest that it is, in fact, a maple-leaf sycamore (*P. acerifolia*). This uncertainty can be attributed to specific morphological characteristics. On one hand, similar to *P. occidentalis*, this tree features a single «ball» of accessory fruit – a nut. On the other hand, its leaves bear a closer resemblance to those of the maple-leaf sycamore.

In light of this ambiguity, we have determined that a genetic comparative analysis is imperative to definitively resolve this matter. Identifying similar species, let alone hybrids, can be challenging and prone to errors. Notably, the esteemed Transcarpathian botanist S.S. Fodor, in one of his publications, misclassified this tree as an eastern sycamore (Fodor, 1951). Subsequently, other authors inadvertently integrated this erroneous data into their works, such as the historian S. Fedak in his book «Uzhhorod through the ages: Essays on

the history of Uzhhorod» (Fedak, 2010). In various publications, Fodor referred to this sycamore as the maple-leaf sycamore (Fodor, 1963), a nomenclature that other authors also adopted in their publications, while in some works, he identified it as a *P. occidentalis* (Fodor, 1964).

To definitively ascertain the species of this ancient sycamore tree in Transcarpathia, we conducted comparative genetic studies. These analyses were conducted at the Canadian Center for DNA Barcoding (Topan et al., 2018) using the following methodology: Sycamore leaves were meticulously collected using sterile methods, and total genomic DNA was extracted using a well-established spin column DNA extraction protocol. The target genetic marker ITS2 (a barcode region for plants) was amplified through polymerase chain reaction (PCR) using specific primers: ITS\_S2F / ITS4. Subsequently, sequencing cycles were performed using a standardized, commercially available terminator BigDye v3.1 kit (Topan et al., 2018).

The sequencing reactions were meticulously analyzed using high-voltage capillary electrophoresis with an automated ABI DNA analyzer 3730xL. DNA sequences obtained from the unidentified samples were then compared to the Barcode of Life Data (BOLD) Species Reference Library, which is accessible at: <http://www.boldsystems.org>.

As a result of these comparative genetic investigations involving the ITS2 genes of the «Drugeth sycamore» alongside *P. occidentalis* and the eastern sycamore, it was established that the «Drugeth sycamore» exhibits a closer genetic relationship to the eastern sycamore (Topan et al., 2018). This suggests the possibility that the «Drugeth sycamore» is a hybrid between the *P. occidentalis* and *P. orientalis*, namely a maple-leaf sycamore (*P. acerifolia* Willd.).

Furthermore, it is worth noting that *P. occidentalis* is known for having a shorter lifespan when compared to the maple-leaf sycamore. Therefore, following the genetic research and further clarification, it can be confidently concluded that the «Drugeth sycamore» is a species of *Platanus acerifolia*.

Significantly, the «Drugeth sycamore» tree has earned a place in the international database of monumental trees of the world, accessible at (Bilanych, 2019).

### Analysis of the main researches and publications on the raised problem

Studies focusing on the eastern sycamore have been carried out in Ukraine, specifically within the steppe zone, as reported by Zahorulko & Korshikov (2020) and Hrabovyj (2003). Sycamores are among the select group of ornamental deciduous trees highly regarded for their decorative value,

distinguished by their lush crowns and the remarkable light-spotted patterns adorning their trunks and branches, as well as their distinctive spherical fruits. Owing to their aesthetic appeal and exceptional resistance to atmospheric pollution, there is an ongoing trend in European cities to replace less hardy species such as chestnuts, maples, lindens, and poplars with sycamores. In the United States, Great Britain, as well as in the countries of South-Western Europe and Central Asia, plane trees are widely utilized in forestry practices.

### Biological and systematic features of various species of the *Platanus* genus

Before delving into the distribution features of this exotic tree species in the Transcarpathian region, let's briefly acquaint ourselves with the biological characteristics of the *Platanus* genus. These are magnificent deciduous trees, boasting broad, thick crowns. Their bark is light in color, smooth, and tends to peel off and fall away in plates, revealing lighter-colored patches beneath, giving the tree trunks a marbled and mottled appearance. Young shoots are densely covered in fine hairs.

The leaves of *Platanus* trees resemble those of the maple in shape but differ in being alternate, large, generally wide, and palmately lobed or divided. They can sometimes be unlobed and elongated, and they are consistently densely covered in fine hairs, particularly when in bloom. These leaves are supported by long petioles. The pubescence on the leaves consists of characteristic spirally branched, jointed hairs. Stipules, which are small leaf-like structures at the base of leaves, are fused at the base and appear thin and membranous on fertile branches, dropping off quickly. On sterile branches, they are wide and resemble leaves.

*Platanus* trees bloom in early spring, either at the same time as the leaves emerge or shortly after. The flowers are small, unisexual, and arranged in single-sex, dense, spherical heads. Pistillate (female) and stamen (male) heads can be found on the same tree, either singly or clustered in groups of 2 to 7, sometimes singly on long, drooping peduncles, typically in the leaf axils and closer to the ends of the branches. The perianth elements are small and irregular in number, making them hard to discern. Stamens number from 3 to 4, sometimes as many as 7, and are almost sessile. Carpels range from 5 to 9, are free, have an ovoid expanded ovary, and a linear column with the stigma surface running along a narrow, elongated strip along the seam.

The fruits of *Platanus* trees are inverted-conical, ribbed, and contain one seed or nut, approximately 0.2 cm in length, with a column at the top, surrounded by a tuft of hairs at the base. These fruits are numerous and densely clustered in rounded pods that hang on long stalks. Often, the fruits persist on the tree throughout the winter,

disintegrating into individual fruits that are dispersed by the wind only in the spring.

The shoots of *Platanus* trees are geniculate (forming a knee-like bend), pubescent, annual, bare, and have an orange-brown color. The leaves are typically as wide as they are long or even wider, shallowly 3-lobed, with larger blades measuring up to 20 cm in diameter, often with a truncate or broad-cordate base. The blades are broadly triangular, with shallow notched-toothed edges, featuring few teeth or, less frequently, being entirely toothless. The middle, larger blade is separated from the smaller lateral ones by very shallow, blunt notches that don't reach one-third of the length of the leaf plate. The teeth on the leaf margins are finely pointed, and the veins are usually in sets of three, occasionally in fives (Sokolov, 1954).

*P. occidentalis* also known simply as «sycamore», should not be confused with the true sycamore, *Ficus sycómorus* L., which is one of the species of the ficus tree and an evergreen plant native to Egypt. The terms «sycamora» and «sycomore» are used to refer to various tree-like plants. In some instances, trees of American origin are referred to as such, including *Planera aquatica*, and even the *Acer pseudoplatanus* L.

*P. occidentalis*, along with six or seven other species, depending on the classification, is native to North America. In the wild, its range spans the eastern half of the United States. The northern boundary extends through states such as Iowa, Michigan, New York, New Hampshire, and the southern shore of Lake Ontario. To the west, the range stretches from Iowa through the eastern regions of Kansas and Oklahoma to the central areas of Texas. In the south, its range is bounded by the Gulf of Mexico coastline and the northern regions of Florida. There are also scattered populations in Mexico.

Biologically, the *P. occidentalis* can withstand temperatures as low as -30 degrees Celsius without significant damage, but it is not particularly drought-resistant. It typically grows along the banks of rivers and lakes, in river valleys, canyons, and on moist alluvial soil. However, it can adapt to other soil types and grow in both full sunlight and light shade. It does not thrive in very dry soils but can tolerate overly wet or waterlogged conditions. In cultivated environments, *P. occidentalis* trees are susceptible to drought stress and are often afflicted by rot. Unlike other sycamore species, *P. occidentalis* is notably affected by the fungus *Gloeosporium nervisequum* (Fuckel) Sacc.

These trees often develop hollow trunks, which has limited their presence in cultivated landscapes. As a result, *P. occidentalis* remain relatively rare in Western Europe, despite being introduced to England as early as 1636. Other sources suggest that

it was introduced into cultivation around 1640 (Vetvicka, 1985).

*P. orientalis* is also commonly referred to as «chynara». This impressive deciduous tree typically reaches heights of 25 to 30 meters, with trunk diameters of up to 12 meters. Its crown is broad, low, and characterized by a loose and spreading structure. The branches often grow at nearly right angles to the trunk, with the lower branches inclining toward the ground. The leaves on the branches are usually five-lobed, occasionally seven-lobed, while the young shoots bear three-lobed leaves that can measure between 12 and 15 cm in length and 15 to 18 cm in width. The tree produces nuts as its fruit, and a distinctive feature of this species is the potential for more than three of these fruits to develop on a single common axis. These fruits ripen over the course of a year, breaking into smaller units that are dispersed by the wind. The small fruits are commonly referred to as «chynaryky». In their natural habitat, Eastern sycamores are found along riverbanks, in valleys, dense forests, gorges, and among mountain woodlands. They can thrive at elevations of up to 1500 meters above sea level.

*P. acerifolia* (also known as *P. hispanica* or *P. hybridus*) is an interspecies hybrid created between the *P. occidentalis* and the *P. orientalis*, either naturally or artificially, in England during the 1640s (although some sources suggest the 1650s). This hybrid is sometimes referred to as the «London sycamore» (Ivanyuk et al., 2013; Simkin, 1982, 1989). The genetic material of *P. orientalis*, which was used to create these hybrids, had been cultivated in European parks for centuries. For instance, there are trees in French and Croatia parks that were originally planted back in the 1550s (Kouta, 2012).

Hence, researchers consider «sycamore» and «hybrid sycamore» as interchangeable terms (Zahorulko & Korshikov, 2020). An example of a similar interspecific hybrid is *Platanus digitala* Gordon (Kokhno, 1986).

Biologically, sycamores are noted for their frost resistance and durability. They can be easily propagated through cuttings. Sycamore leaves are typically five-lobed and can grow up to 0.25 meters in diameter. The flowers are arranged in unisexual heads, with male flowers being yellowish and female flowers appearing red. These flower heads are typically found in pairs and are attached to long, pendulous pedicels.

Regarding their distribution in Transcarpathia, literary sources indicate that sycamores have been present in the region for a considerable time. However, the extensive use of sycamores in the landscaping of towns and villages in Transcarpathia primarily began in the 20th century.

*P. occidentalis* is reported to grow in the Velyki Berezny park, which covers an area of 8,000 m<sup>2</sup>

(Fodor, 1951). This park saw the planting of a significant number of exotics in 1906, many of which successfully acclimatized and survived two world wars. In the same work by the botanist, it is mentioned that *P. occidentalis* can be found in every city in Transcarpathia (though it pertains to cities with that status in 1951).

In Berehovo, *P. occidentalis* is mentioned as growing within two small arboretums that were established on the basis of a former garden. This garden, or rather, arboretum, was originally laid out in the early 19th century on the northeastern outskirts of the city. It resembled a typical forest park from the first half of the 19th century. Over time, the territory of the old forest park was significantly reduced and even divided into several parts. One of these parts, covering more than 2 hectares, was preserved around the modern district hospital and underwent reconstruction at the end of the 19th century. Instead of plantations of native trees, many introduced species, including the *P. occidentalis* and common bitter chestnut, were planted.

The second portion of the former garden is now located in the center of the city on Mukachivska Street, across from the district executive committee building. This arboretum covers an area of 1.5 hectares and still contains old trees of local origin like poplars, lindens, and maples, as well as introduced species such as *P. occidentalis*, alder, American maple, and Virginia juniper, which were planted around 1912. These trees are reportedly in good condition.

In the large city park of Mukachevo, situated on the left bank of the Latorytsa River, which was established between 1920 and 1930 and spans an area of 2.5 hectares, *P. occidentalis* also grow (Terletsy et al., 1985).

Pereni Vynogradivskyi Park, formerly known as the O. M. Gorky Park, once housed numerous interesting species of introduced plants. This included *P. occidentalis*, as well as catalpa bignion, gray walnut, western frame, common tulip tree, Virginia juniper, supreme ailant, Menzies pseudotsuga, and spiny spruce. However, based on the verbal report of park employees, *P. occidentalis* was struck by lightning and had to be cut down, leading to its absence in the park today.

In Transcarpathia, it is reliably known that the *P. orientalis* tree grows within the territory of the Carpathian Biosphere Reserve (Moskalyuk, 2019).

S. Fodor reports that in the town of Vynohradov, within the grounds of school No. 4, specifically in the arboretum established between 1890 and 1900, there is an Eastern sycamore. This tree is found alongside other exotic trees, including the only *Amur acacia* tree in Transcarpathia. According to Fodor, the Eastern sycamore can also be observed in the city forest park on Lypovia Street. However, it

is important to note that this information may need verification in the present day.

*P. acerifolia*. According to literature, this type of sycamore is found in the parks of Uzhhorod, Mukachevo, Vynogradivshchyna, Berehova, and other places in Transcarpathia. There is also information that in the Arboretum named after E. Kiral (near school No. 4 in Vynogradov), both *P. occidentalis* and *P. acerifolia* grew (Terletsky, 1985). The green quarter in the yard of the city hospital is also noteworthy for its exotic nature, where, according to S.S. Fodor (Fodor, 1964), plane trees also grow.

In the Mukachevo State Forestry, sycamores have been fully naturalized and have successfully grown in traditional production areas alongside native tree species. Since 1957, more than 30 hectares have been planted with sycamores. These trees are characterized as tall and slender, with significant commercial value and the potential for a good yield of valuable wood. They thrive in closed stands.

### Results and discussion

An analysis of tree species of the genus *Platanus* in the city of Uzhhorod was conducted. From the species mentioned in literary sources, only the sycamore was found in Uzhhorod, and it is prevalent in several parks, along the streets, notably on Babyyak Street, in the quarter between Mytna, Hoyda streets, and Druzhba narodov square (with two large specimens), in the courtyard of the Seventh-day Adventist Church (eight trees), as well as on Drugetiv Street, among other locations.

Additionally, a young sycamore alley has been planted in Bozdos Park.

Based on calculations, there are 75 sycamore trees growing on Slavyanska embankment. It's worth noting that near the Slavyanska embankment, in the floodplain of the Uzh River, self-sown plane trees have been discovered. Furthermore, it is important to highlight that the plane tree alley was once proposed for inclusion in the list of monuments of garden and park art.

### The oldest sycamore tree in Transcarpathia

The oldest known sycamore tree in the Transcarpathian region can be found in the Pidzamkovyi Park of Uzhhorod (Fig. 1). This park has a rich history dating back to the 16th century and has gone by various names over the years, including Zoological Park, Pidgradsky Park, Secheny Park, Park of Culture named after Gorky, and finally, Podzamkovy Park. The sycamore tree, known as the «Drugeth sycamore», is believed to have been planted in the 17th century by Count Druget, the owner of Uzhhorod Castle. Count Druget is known to have introduced many plants and trees popular in the south to the region (Pop et al., 2011). There is some debate about the tree's exact age, with some experts claiming it is over five hundred years old and others suggesting it is more than three hundred years old, but not less. Terletsky V. and Fodor S. (1985) mentioned that this tree was imported from Italy in 1610. However, this date has not been confirmed by primary sources, and it's also known that the London sycamore was bred around the 1650s.



Fig. 1: *Platanus acerifolia* (Aiton) Willd. (photo by Dzhaman Ruslana)



According to some information, two such plane trees were planted in the park near Uzhhorod Castle (Matsenko, 2000). A section of a 360-year-old sycamore tree is housed in one of the exhibition halls of the nature department of the Transcarpathian Museum of Local Lore named after T. Legotsky (Beseganych, 2016). This section was cut from a tree that died in the former Cultural Park named after Gorky (now Pidzamkovyi Park) in the 1960s. Given that the tree was 360 years old when it was cut and that 50 years have gone by since then, it may add credence to the claim that the tree was planted in 1610. This, however, would contradict the hypothesis that this hybrid evolved in England or other Western European nations in the 1650s. This begs the question of whether London sycamore and maple-leaf sycamore are synonyms for the same hybrid or distinct hybrids. The sycamore in Pidzamkovyi Park is notable not only for its age but also its size, with a circumference of 630 cm and a height of approximately 30.5 m. Even in the mid-20th century, there were concerns about the tree's well-being. Historian and public figure Petro Sova noted that thousands of people trampled the soil around it, preventing the roots from getting proper nourishment, leading to the tree's decline. To save the tree, he proposed building a fence around it with a radius of 10 m and loosening the soil. At that time, there was a small fence, but P. Sova considered it insufficient (Sova, 1971). The tree is no longer encircled, and it was been declared as the Transcarpathia Memorial Tree, with a memorial plaque put nearby.

Sycamores, as exotic trees, hold great potential for urban and village greening in Transcarpathia and Ukraine as a whole. They can be used to beautify streets, parks, and squares. Additionally, settlements are also adorned with closely related species such as *Liquidambar styraciflua* Worpleston.

## Conclusions

1. The presence of species and interspecies hybrids from the *Platanus* genus is evident in nearly all cities within Transcarpathia. However, a more comprehensive examination is needed to refine the species composition and distribution in Transcarpathia, particularly with a focus on redefining all trees previously categorized under the label of «western sycamore» in older literary sources.

2. Among these species, the maple-leaved sycamore (*P. acerifolia*) stands out as the most promising for our local conditions. It exhibits a higher degree of frost tolerance (withstanding temperatures as low as  $-25/-30^{\circ}\text{C}$ ) and is remarkably adaptable to various soil types, thriving in both wet and dry conditions, and on soils ranging from acidic to alkaline. It can be successfully cultivated up to elevations of 600 meters above sea level.

3. The ancient «Drugeth sycamore» in Pidzamkovyi Park belongs to the maple-leaved sycamore species (*P. acerifolia*).

4. Despite the fact that the «Drugeth sycamore» sycamore is protected, additional measures must be put in place. For example, a fence around the tree would be advisable to prevent people from trampling the soil surrounding its base, which would otherwise speed up the aging process of this beautiful tree. Other efforts that should be taken include marking the tree and installing an informative and protection board to increase awareness of its significance and assure its long-term preservation.

## Acknowledgements

The author expresses sincere gratitude to Professor Matthew Temple (Nazareth College, Rochester, USA) for advice and assistance in ordering and obtaining the results of the genetic study (mentioned in this article).

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Received: 19.09.2023. Accepted: 30.10.2023. Published: 18.11.2023.

**Ви можете цитувати цю статтю так:**

Bilanych M. *Platanus* L. genus in Transcarpathia. *Biota, Human, Technology*. 2023. №2. С. 21-30

**Cite this article in APA style as:**

Bilanych, M. (2023). *Platanus* L. genus in Transcarpathia. *Biota, Human, Technology*, 2, 21-30

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