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Monumental trees of Ukraine and public awareness of them

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Abstract. Studying the species diversity and condition of monumental trees contributes to their preservation and is important for public awareness of their role in ecosystems and the country's ecological heritage. The purpose of the study was to reveal the significance of such trees for society. The task of the work was to research the characteristics of monumental trees in Ukraine. The history of environmental protection is analysed and the features of monumental tree preservation in Ukraine are presented. The beginning of environmental protection activity related to the preservation of trees in Ukraine and the most active periods have been revealed of it. The national features of the popularization of monumental trees are given. Based on the analysis of botanical natural monuments cadastres of Ukraine and Kyiv, quantitative and species composition of monumental trees were established. The most common (*Quercus robur*), common, less common and rare (*Buxus sempervirens*, *Catalpa bignonioides*, *Metasequoia glyptostroboides*, *Pseudotsuga menziesii*, *Rhododendron myrtifolium*, *Sequoiadendron giganteum* and others) species of monumental trees have been established, and important issues regarding their conservation are indicated. According to the types of street plantings, the majority (68%) are single trees. To assess the awareness of the population about ancient trees, the method of sociological survey of respondents was used. The most significant values of monumental trees for the population were studied. The importance of the populations' awareness of old trees through the development of an emotional connection with them, which contributes to their protection, has been established. The obtained results can be used in future environmental protection activity, exchanging of scientists' experience from different countries regarding the preservation of such trees, enrichment of information about growth characteristics, historical facts or other issues related to these trees

Keywords: Nature Reserve Fund of Ukraine; genera and species; preservation; protection; popularization; social and cultural value

Introduction

Urban trees in big cities exist in stressful and harsh habitat conditions. The compact urban form has a heavy load on green spaces and limits the future tree growth in big cities. The main causes of tree death are injuries received during road and construction works, associated with soil disturbance and root damage. Trees commonly suffer from human abuse or improper care. Many old trees decay and die prematurely. The number of trees that manage to survive and reach a respectable age is much smaller, and only separate trees can live for many centuries.

According to C.H. Cannon *et al.* (2022), only 1% of trees achieve an age that is 10-20 times greater than the average tree age, and a quarter of all trees can have ages that are 3-4 times greater than the average tree age. In urban

spaces, it is more difficult to care for trees and protect them from adverse environmental conditions. Ordinary measures to support old trees will not be enough, and more efforts are needed to preserve them. Losses resulting from the death of ancient trees cannot be compensated or replaced.

The intangible value of monumental trees includes elements related to history, culture, folklore, traditions, religion, etc. According to I. Camarda & G. Brundu (2021), monumental trees are ecologically important keystone organisms that have characteristics fundamental for sustaining biological assemblages or individual species. Monumental trees often provide a range of rich and scarce habitats, supporting many rare and endangered species, and are

an indispensable part of every country's landscape and biological heritage. M. Gilhen-Baker *et al.* (2022) emphasize that old trees create microclimates that slow global warming and produce phytochemicals with many biomedical properties. Such trees are valuable to the community, they are given special attention and care, and they are given a special status of protection. Preservation and protection of monumental trees facilitate the connection between the past, present, and future of communities. Therefore, according to K. Kabassi *et al.* (2021), many natural monuments have been preserved through the coordinated actions of local communities and organizations. Heritage trees in different countries are identified and valued based on their important historical, cultural, and physical criteria. M. Ritchie *et al.* (2021) suggest a standardized evaluation system to combine heritage trees from separate countries into a unified network.

In the research, K. Vandekerkhove *et al.* (2019) explained the densities and sizes of the old trees by the favourable climate and site conditions combined with the successful previous management interventions of care and pruning that led to continuous, unsuppressed growth. Also, X. Chi *et al.* (2020) note that the distribution of old trees is limited by microclimatic and soil conditions, and their density is determined by human activity. The study by J. Dong *et al.* (2021) provides insight into the main factors that threaten to old trees (natural disasters, urbanization, and pests). D.B. Lindenmayer *et al.* (2018) highlight the need for ancient tree management that includes increasing and expanding protection for all existing large old trees. D. Yin *et al.* (2024) confirm that modern technologies, especially unmanned aerial vehicles, could help in monitoring the growth status of old trees and strengthening pest control.

Ancient trees have an important value for science. S. Popovych & A. Dzyba (2022) researched

ancient trees and concluded that separate regions could be potentially most favourable for the introduction and acclimatization of some species. An important study of the old tree age estimation was conducted by J.J. Camarero *et al.* (2021) concerning the olive trees.

The purpose of this study was to assess residents' awareness of ancient trees. The task was to introduce the characteristics of monumental trees in Ukraine. It was determined directions for their popularization and responsible treatment of these trees since the preservation of ancient trees depends on more informed management. Until now, public awareness of ancient trees has not been assessed in Ukraine, and this study, using a scientific and objective approach, hopes to contribute to this cause.

Materials and Methods

In the scientific literature, various terms are used to describe trees that differ from others in age, status, importance, and appearance: ancient, champion, famous, heritage, long-lived, monumental, notable, and precious trees (Jim, 2017; Lai, 2019). In this work, it was used in the most common terms: ancient, heritage, monumental and old trees (Pushkar *et al.*, 2021).

The assessment of monumental trees was made due to the analysis of databases of the Nature Reserve Fund of Ukraine (n.d.) and the Nature Reserve Fund of Kyiv (n.d.). Based on a combination with another extensive database of the Public Ukrainian Ecological Organization "Kyiv Ecological and Cultural Centre" (n.d.), a comprehensive overview of the monumental trees was compiled.

The research program included the following categories (Kushnir *et al.*, 1995):

1. Lost historical trees. Information about them is of great importance.
2. Trees that grow in places of famous historical events.
3. Trees named after prominent figures.

4. Trees planted by famous people.

5. Trees with unique biological properties.

They are divided into the following groups:

a) “plus” and “elite” trees, which are characterized by enhanced growth, a trunk of good quality, a correctly formed crown, etc.;

b) trees over a hundred years old;

c) trees with unique decorative properties.

The methodology of the study consisted of a review and identification of monumental trees. Four frequency classes of trees were grouped: dominant (>500 trees per species), common (30-500 trees per species), less common (10-30 trees per species), and rare (few per species). The study complied with the standards specified in the Convention on Biological Diversity (1992), and the Convention on the Trade in Endangered Species of Wild Fauna and Flora (1973).

The importance of the study was to promote the preservation of ancient trees' preservation by using sociological components. An online survey using Google Forms was carried out in the period between June 5 and July 6, 2023. The total number of respondents was 748. Participation was anonymous and voluntary. The survey was conducted following the ethical norms specified in the ICC/ESOMAR International Code on Market, Opinion and Social Research and Data Analytics (2016). The surveys were conducted anonymously, with only one question about any affiliation with the natural sciences that allowed dividing all respondents into two groups. People whose activities are related to natural sciences (members of environmental groups, students of natural sciences, teachers of biological and environmental disciplines, etc.) accounted for 39% of all respondents. Accordingly, the other group of respondents, those who are not into nature, accounted for 61%. The questionnaire was developed based on methods of sociological research. There were five questions, including one open one. The key question is whether the

respondent knows about ancient trees or not. The questions about the location of heritage trees and their value were included in the questionnaire. The survey was distributed among social media group members across Ukraine. The data were analysed with Excel statistical functions using Microsoft Office XP software and Statistical Package for Social Sciences, version 11.5 (SPSS Inc., Chicago, 2002).

Results and Discussion

History of trees' protection in Ukraine

The Nature Reserve Fund of Ukraine is represented by botanical, geological, hydrological, and complex (which includes the previous three) natural monuments. All ancient trees are classified as biological natural monuments. The legal bases for monumental trees' protection are several nature protection laws in Ukraine: Law of Ukraine No. 1264-XII “On Environmental Protection” (1991), Law of Ukraine No. 2456-XII “On Nature Reserve Fund of Ukraine” (1992), and Law of Ukraine No. 1805-III “On Protection of Cultural Heritage (2000). According to the laws, natural monuments can be of national or local importance. Most of the monumental trees in Ukraine have local importance.

The botanical nature monuments are present in each Oblast of Ukraine (Fig. 1), but the number of them varies significantly by Oblast. This is due to historical factors (who owned the territory and how it was maintained) and growing conditions (a greater number of old trees have survived in areas with more forest cover and rainfall). Ancient trees often grow in historical places, large parks, and nature reserves. The condition of the monumental trees in the occupied territories (parts of Donetsk, Zaporizhzhia, Luhansk, Kherson Oblasts and the Autonomous Republic of Crimea) is unknown.

Old trees are being put into protection, taking into account many factors in Ukraine. Special trees can get protected status, and then

they are named monumental trees. Single monumental trees, alleys, and groups of such trees,

or forests with monumental trees could be under protection.

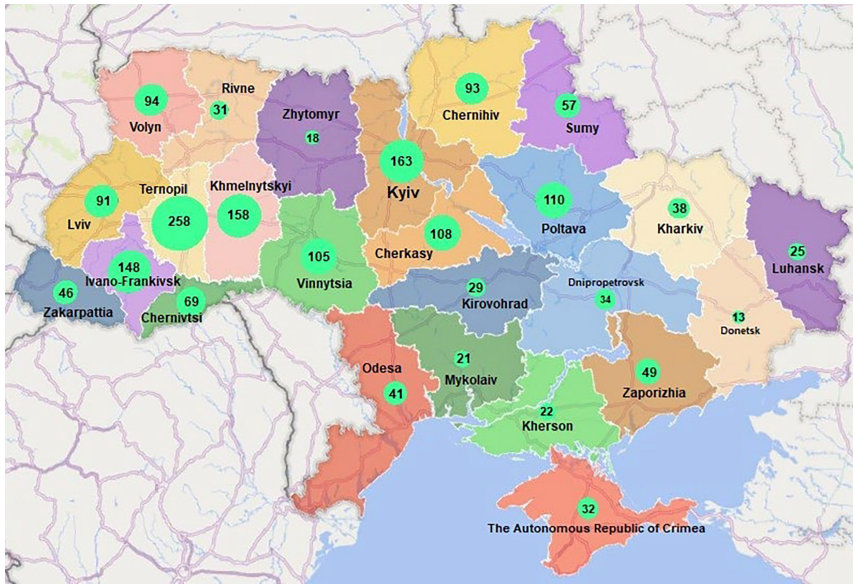


Figure 1. The map of the expansion of botanical nature monuments in Ukraine

Source: developed by the authors based on the Nature Reserve Fund of Ukraine (n.d.)

The first information about the protection of ancient trees in Ukraine dates back to 1883 and concerns Crimean trees (Shnayder *et al.*, 2011). Protection of old trees in the territory of Ukraine began in 1964. *Quercus robur* and *Tilia cordata*, which grow in Vinnytsia, Zhytomyr, Poltava, and Chernihiv Ukraine Oblasts, were the first tree species to receive protected status. The first mass protection activities of old trees took place in 1972 (191 places of growing ancient trees), followed by 1984 (278 places of growing ancient trees). According to the diagram (Fig. 2), 250 growing places of ancient trees got special protected status during 2010–2019.

Most of the trees in Ukraine were put into protection by the initiative of the Public Ukrainian Ecological Organization “Kyiv Ecological and Cultural Centre”, which since 1989 has been engaged in law-making and ecological

educational activities, including regarding ancient trees (Shnayder, *et al.*, 2011).

Low environmental protection activity since 2020, due to anti-COVID measures, and later – a large-scale invasion of the territory of Ukraine, has led to a halt in the protection of new trees. The trees were last given the status of monumental trees in 2019 in Vinnytsia, Kyiv, Poltava, Sumy and Ternopil Oblasts.

A monumental tree is a tree that has a biological, cultural, or aesthetic value of considerable age and size. In addition, monumental trees are a witness to history and the former landscape. Therefore, monumental trees are also often named after a famous historical event or a person who visited it (in reality or according to legend).

In Ukraine during the procedure of putting trees into protection, the trees are often given

the names of famous historical, scientific, and cultural figures: “Oak of Pero Mohyla”, “Mulberry of Shevchenko”, “Chestnuts of Grishka”, “Ginkgo of Sikorsky”, “Yew of Lesya Ukrainka”, “Oak of Bohdan Khmelnytskyi”, “Mulberry of

Stus”, “Oak of Boleslav”, “Oak of Simon Petliura”, “Oak of Prus”, “Oaks of Exupery”, “Oak of Ivan Franko”, “Oak of Franz Joseph”, “Pine of Nesterov”, “Three beech trees of Oleksiy Burachynsky”.

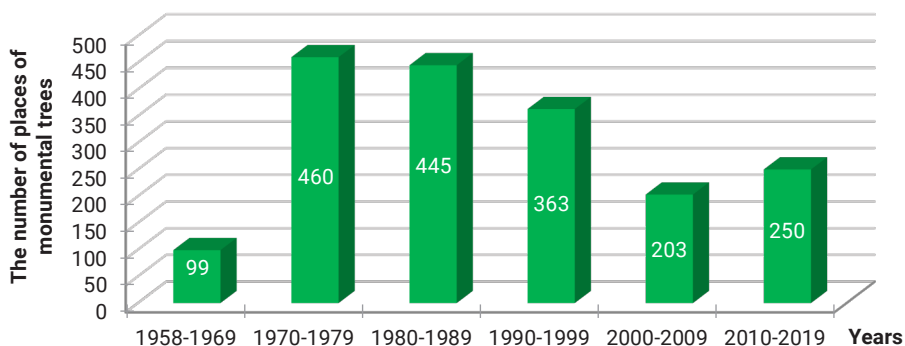


Figure 2. The history of granting nature protection status to monumental trees

Source: developed by the authors based on the Nature Reserve Fund of Ukraine (n.d.)

Often, not only historical facts but also myths and legends are associated with such trees. Sometimes, in order to increase understanding of the heritage trees’ value, Christian icons are hung on them, or creative events or contests are held near or with them.

To attract the attention of residents to the monumental trees, in 2010 the state authorities held an All-Ukrainian contest “National tree of Ukraine” the nominations “The oldest tree of Ukraine”, “Memorial tree of Ukraine”, “Historical tree of Ukraine”, “Aesthetically valuable tree of Ukraine”. Then 17 trees were chosen, including a 2000-year-old olive tree, a

1700-year-old pistachio tree, a 1300-year-old oak tree, a 1300-year-old strawberry tree, and an 800-year-old linden tree (Order of Ukraine No. 611..., 2011).

More than 3,000 monumental trees grow in big or small groups, as single trees and in alleys in Ukraine. The dominant species of monumental trees is *Quercus robur* (Table 1). There are 29 places where monumental trees grow in alleys, which mostly represented by species: *Aesculus hippocastanum*, *Fagus sylvatica*, *Juglans ailantifolia*, *Juglans nigra*, *Juglans regia*, *Larix decidua*, *Picea abies*, *Pinus strobus*, *Pinus sylvestris*, *Salix alba*, *Tilia cordata*, *Quercus robur*, *Quercus rubra*.

Table 1. Frequency of species of monumental trees

Dominant species	Common species	Less common species	Rare species
<i>Quercus robur</i>	<i>Aesculus hippocastanum</i> , <i>Fagus sylvatica</i> , <i>Fraxinus excelsior</i> , <i>Juglans nigra</i> , <i>Larix spp.</i> , <i>Pinus sylvestris</i> ,	<i>Abies alba</i> , <i>Acer spp.</i> , <i>Alnus glutinosa</i> , <i>Carya alba</i> , <i>Carpinus betulus</i> , <i>Ginkgo biloba</i> ,	<i>Ailanthus altissima</i> , <i>Arbutus spp.</i> , <i>Betula nigra</i> , <i>Buxus sempervirens</i> , <i>Calocedrus decurrens</i> , <i>Castanea sativa</i> ,

Table 1, Continued

Dominant species	Common species	Less common species	Rare species
	<i>Picea abies</i> , <i>Platanus orientalis</i> , <i>Populus alba</i> , <i>Quercus rubra</i> , <i>Tilia cordata</i>	<i>Juglans regia</i> , <i>Juniperus virginiana</i> , <i>Magnolia spp.</i> , <i>Morus alba</i> , <i>Pinus strobus</i> , <i>Pinus nigra</i> , <i>Pyrus communis</i> , <i>Styphnolobium japonicum</i> , <i>Taxus spp.</i> , <i>Thuja spp.</i>	<i>Catalpa bignonioides</i> , <i>Corylus spp.</i> , <i>Cotinus coggygria</i> , <i>Crataegus monogyna</i> , <i>Cupressus spp.</i> , <i>Fraxinus americana</i> , <i>Gleditsia triacanthos</i> , <i>Gymnocladus dioicus</i> , <i>Juglans cinerea</i> , <i>Juglans mandshurica</i> , <i>Laurus nobilis</i> , <i>Liriodendron tulipifera</i> , <i>Malus spp.</i> , <i>Metasequoia glyptostroboides</i> , <i>Pinus cembra</i> , <i>Pinus peuce</i> , <i>Pinus sibirica</i> , <i>Picea pungens</i> , <i>Pistacia spp.</i> , <i>Phellodendron amurense</i> , <i>Platyclusus orientalis</i> , <i>Prunus padus</i> , <i>Pseudotsuga menziesii</i> , <i>Quercus petraea</i> , <i>Rhododendron myrtifolium</i> , <i>Rhus typhina</i> , <i>Robinia pseudoacacia</i> , <i>Sequoiadendron giganteum</i> , <i>Sorbus spp.</i> , <i>Syringa josikaea</i> , <i>Tilia tomentosa</i> , <i>Ulmus minor</i> , <i>Viburnum opulus</i>

Source: developed by the authors based on the Nature Reserve Fund of Ukraine (n.d.)

Dozens of ancient trees have been destroyed due to untimely maintenance and vandalism in Ukraine. Naturally, time does not stand still, and new ancient trees must be added to the nature reserve fund. Thus, hundreds of trees need to be protected.

Monumental trees in Kyiv

Kyiv is a large urbanized city with significant air pollution, so trees grow under the pressure of anthropogenic influence (Tokarieva, 2004). At the same time, Kyiv is rich in unique ancient and monumental trees. Currently, in Kyiv,

almost 100 places where heritage trees grow, with a total number of 500 trees, which have been put under protection. The monumental trees in Kyiv are represented by 23 genera, most of which belong to the phylum of *Magnoliophyta* (Fig. 3). The most common species among

monumental trees are *Aesculus hippocastanum*, *Fraxinus excelsior*, *Tilia cordata*, *Quercus robur*. The genera *Abies*, *Cornus*, *Fagus*, *Ginkgo*, *Larix*, *Metasequoia*, *Picea*, *Prunus*, *Pyrus*, *Robinia*, *Sorbus*, *Styphnolobium*, *Thuja* are represented by a smaller number of trees.

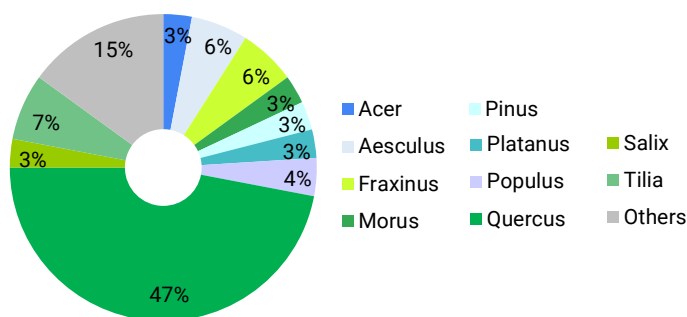


Figure 3. Distribution of monumental trees by genera in Kyiv

Source: developed by the authors, based on Nature Reserve Fund of Kyiv (n.d.)

The oldest districts accommodate more ancient trees, whereas newer districts have notably fewer. Most of the monumental trees (68%) are single trees (Fig. 4). Trees growing in groups make up 37% of all monumental trees. The smallest number of monumental trees (1%) grows in the alleys.

Some heritage trees are in an unsatisfactory condition. However, they have survived to the present day and, with proper care, can continue to exist. A handful of these heritage trees face challenges such as diseases, pests, or even anthropogenic factors. Nevertheless, their unique characteristics and historical significance should be identified as objects for priority conservation. The research on the condition of these trees not only reveals issues but also indicates the necessity of taking measures for their preservation and restoration.

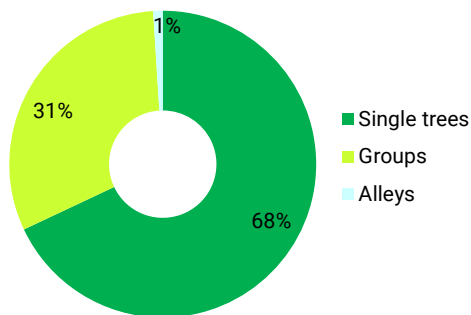


Figure 4. Distribution of monumental trees by types of planting

Source: developed by the authors, based on Nature Reserve Fund of Kyiv (n.d.)

Public awareness of the ancient trees' value

Sociological research is an integral part of designing the development of the urban environment. To study the impact of phenomena on people, it is necessary to understand the level of their awareness of these phenomena. The respondents who took part in the survey were generally interested in it and showed an active position. At the list, 86% of respondents said that they knew about ancient trees and 76% of respondents knew where they grow (Fig. 5).

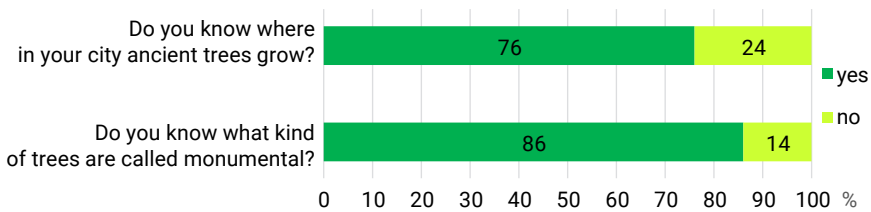


Figure 5. Public awareness of ancient trees in Ukraine

Source: developed by the authors

When choosing the values, only 15% of respondents gave completely correct answers (mentioned every value: aesthetic, cultural, ecological, and historical values). When

respondents assessed the importance of the values of such trees, the historical value was chosen as the main one, and the aesthetic value as the least important (Fig. 6).

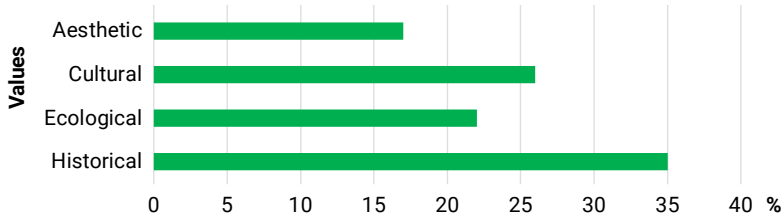


Figure 6. The importance of the values of the ancient tree according to the respondents

Source: developed by the authors

Respondents, whose activities are related to the natural sciences. Among people who are involved in nature, everyone knows what an ancient tree is, but not everyone knows where such trees grow in their immediate vicinity. This means that even specialists do not have sufficient information about the notable trees. Along with the existing interest in ancient trees, respondents do not always have a correct understanding of their value. For example, 81% of respondents chose the wrong answer among all the values of ancient trees – “they have economic value”. Even people interested in nature conservation sometimes have an inaccurate understanding of the value of ancient trees.

Respondents, whose activities are not related to natural sciences. Respondents from the other group, whose activities are not related to

natural sciences, obviously have less knowledge about ancient trees. Thus, 22% of respondents in this group do not know what kind of trees are called ancient trees, and 30% of respondents could not answer the question “Where do such trees grow?”.

The results of the survey on the values of ancient trees showed that there is awareness of the importance of such trees, although 84% of respondents selected all the answers together with the wrong ones.

Sociological research has shown that people actively participated in the survey, were interested in gaining new knowledge about ancient trees, and were ready to join in the campaigns for their preservation. The significant number of responses to the optional open-ended question confirms this. 82% of

respondents described the actions they consider necessary for the conservation, necessary care, and promotion of “green giants”. Among the most answers interesting were: “It is necessary to organize informative, creative lectures and excursions for young people, disseminate information on the geographical location of ancient trees and other historically and culturally important plants in our country, their important role in society”, “It is necessary to conduct timely inspection and treatment, inform the younger generation about such trees as cultural heritage”, “An effective state policy on this issue is needed. Strengthening responsibility for the destruction or damage to heritage trees”. These answers emphasize the demand of people for more action by the authorities, ecoactivists, environmentalists, etc. The responses also confirm the need to spread knowledge about ancient trees, the organization of environmental events, and the promotion of environmental knowledge.

Therefore, ancient trees can only be preserved if the population is aware of their value. All other means of maintaining such trees are additional. Therefore, it is necessary to educate people about environmental behaviour using social and environmental sciences.

Monumental trees are special historical, natural and cultural assets of countries. They can contribute substantially to social welfare through the provision of ecological, aesthetic, and cultural benefits. In urban environments, monumental trees serve as pivotal structures that offer essential habitat resources for wildlife (Yaacob *et al.*, 2016). The loss of monumental trees will lead to adverse effects on the biodiversity and ecosystem services within a particular area. Additionally, these trees play a significant role in the cultural heritage of the country. Monumental trees, which are put into protection, help residents to realize the importance and value of such trees. The analysis of

existing databases (cadastres) of monumental trees in different countries reveals their diversity of species, sizes, and values (Dreslerová, 2017; Zhang *et al.*, 2017).

The study of M. Blicharska & G. Mikusis-ki (2014) emphasizes that ancient trees are part of a social realm, but their social significance is often neglected. The authors argue that recognizing ancient trees as integral to human identity is crucial for addressing the global decline of such trees. While the social significance of these trees is frequently overlooked in environmental conservation efforts, it ought to be a fundamental aspect of conservation policy (Pietrzak-Zawadka, 2016). The study by L. Hu *et al.* (2011) confirmed that local cultural beliefs and practices contribute to the preservation of large old trees. M. Kowalski (2020) suggests that heritage trees should be of interest not only to naturalists but also to sociologists. The author tried to analyse the reasons for the lack of public interest in heritage trees. M. Suchocka *et al.* (2022) conducted research aimed at revealing the population’s perception of ancient trees and establishing certain dependencies. The findings showed that there is a connection between how often people visit natural areas and how much they care about old trees. Moreover, older respondents (aged 56 and above) were more inclined to want to safeguard and nurture ancient trees. The study suggested that engaging in outdoor activities in urban forests could foster an emotional bond with ancient trees, potentially leading to greater efforts to protect them.

The number of monumental trees is rapidly decreasing in various parts of the world, with serious consequences for ecosystems and biodiversity. It is clear that a global coalition is needed to protect monumental trees. G. Piovesan *et al.* (2022) call for international efforts to conserve, identify and protect ancient trees as they may disappear. In the scientific environment, questions regarding the creation of cadastres

are raised not only at the local and national levels but also at the European and world levels. In the work of P. Zarzyński & A. Grzywacz (2019), it was proposed to give unique trees the status of a National Natural Monument and a European Natural Monument. It would also be good to unify the criteria that should be taken into account when assessing the historical, cultural, aesthetic, social and other values of monumental trees in different countries. Updating legislative and administrative systems and regular tree care can increase the long-term survival of monumental trees. Scientists T. Green (2002), L. Chiara (2011) also emphasize the need to regulate the terminology related to unique trees not only at the state level but also at the international level, which will contribute to such trees' preservation. Moreover, they argue that establishing standardized terminology for distinctive trees is crucial not just within individual states, but also on a global scale. This standardization at the international level is seen as instrumental in enhancing the preservation efforts of these exceptional trees. N. Becker & S. Freeman (2009) tried to understand the value of monumental trees through the economic component and established that funds should be allocated for the preservation of such trees.

W.Y. Chen (2015) found that there was a great need for unique trees to be interpreted by the public in a way that reflects their true value to society. He identified a significant demand for the public to comprehend unique trees in a manner that accurately reflects their genuine societal value. This underscores the importance of effective communication and public awareness campaigns to highlight the true worth of these distinctive trees in the broader context of societal well-being. X. Arnan *et al.* (2012) and C.Y. Jim (2017) highlight that community involvement is critical to the preservation and management of ancient trees. They underscore the critical role of community involvement in

the preservation and management of ancient trees. Their research emphasizes that engaging local communities is essential for fostering a sense of responsibility and shared commitment towards the protection of these significant natural assets. Therefore, J. Liu *et al.* (2019) recommend mobilizing citizens to participate in environmental protection activities. Hence, it was recommended to mobilise citizens to actively participate in environmental protection activities. Their suggestion underscores the pivotal role of public engagement in fostering collective responsibility for environmental conservation, including the safeguarding of ancient trees. In addition, H. Lin *et al.* (2020) suggested improving young citizens' knowledge of local monumental trees by linking them to local culture. C. Ordóñez-Barona *et al.* (2021) emphasized the importance of protecting and preserving such trees on private lands. N. Yao *et al.* (2024) introduced a conceptual framework aimed at evaluating the socio-cultural value of old trees and implementing multiscale protection measures. This framework offers insights that could inform enhancements to existing conservation policies.

Monumental trees serve as habitats for numerous rare and endangered species and represent an irreplaceable component of Ukraine's landscape and biological heritage. The authorities often provide administrative and professional support in the preservation of natural monuments' preservation. The city authorities of Kyiv take special measures to manage and protect them by publishing official reports with detailed information on the characteristics of the trees, their location, and measures to preserve them. A tree protection law makes sense if it can be implemented in an efficient and professional (Schmied & Pillmann, 2003). Therefore, the preservation of monumental trees depends on better management, and the awareness of residents and the encouragement

of responsibility for these trees are incredibly important. This study may initiate other lines of research to improve the management of unique trees.

Conclusions

There are more than 3,000 monumental trees in Ukraine, 500 of which grow in Kyiv and its surroundings. The distribution of monumental trees varies across Oblasts, which is influenced by historical and climatic factors. The condition of more than 100 monumental trees in the occupied part of the country is unknown.

The dominant species of monumental trees is *Quercus robur*, the common species are represented by *Aesculus*, *Fraxinus*, *Populus*, *Tilia* and other genera in Ukraine. Monumental trees are usually single trees and only 29 places where monumental trees grow in alleys. Monumental trees of Kyiv are represented by 23 genera, most of which belong to the type *Magnoliophyta* and grow as single trees (68%). The richest species composition of rare species is represented by *Ailanthus altissima*, *Betula nigra*, *Buxus sempervirens*, *Calocedrus decurrens*, *Castanea sativa*, *Catalpa bignonioides*, *Cotinus coggygria*, *Craetagus monogyna*, *Fraxinus americana*, *Gleditsia triacanthos*, *Gymnocladus dioicus*, *Laurus nobilis*, *Liriodendron tulipifera*, *Metasequoia glyptostroboides*, *Phellodendron amurense*, *Platyclusus orientalis*, *Prunus padus*, *Pseudotsuga menziesii*, *Quercus petraea*, *Rhododendron myrtifolium*, *Rhus typhina*, *Robinia pseudoacacia*, *Sequoiadendron giganteum*, *Syringa josikaea*, *Tilia*

tomentosa, *Ulmus minor*, *Viburnum opulus*. Some genera are represented by several rare species (*Arbutus*, *Corylus*, *Cupressus*, *Juglans*, *Malus*, *Pinus*, *Pistacia*, *Sorbus*).

Ukrainian environmental NGOs often initiate the protection of ancient trees. Sociological research has shown a lack of public awareness of monumental trees. People's interest in nature, and monumental trees in particular, can be stimulated by local and regional authorities through cultural and environmental education activities. Positive experience in promoting monumental trees was gained by naming them after famous cultural and historical figures. Such "named trees" are often revered by residents. Involving the public in environmental protection activities through education and other programmes could raise awareness of the special value of monumental trees and promote their preservation. Thus, the preservation of monumental trees is only possible with the support and awareness of the value of the population.

Stabilization of the monumental trees' condition and care of them, the development of methods of monitoring their sanitary condition, and the formation of a responsible attitude of the population towards them are promising areas for further research.

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Conflict of Interest

None.

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Дерева-пам'ятки природи України та обізнаність громадськості про них

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Анотація. Вивчення видового розмаїття та стану дерев-пам'яток природи сприяє їхньому збереженню та важливе для усвідомлення громадськістю їхньої ролі в екосистемах та екологічному спадку країни. Мета дослідження полягала в розкритті значення дерев-пам'яток природи для суспільства. Завданням цього дослідження було ознайомлення з характеристиками дерев-пам'яток природи в Україні. Проаналізовано історію заповідання та представлені особливості охорони та збереження таких дерев в Україні. Виявлено початок природоохоронної діяльності щодо заповідання дерев в Україні та найактивніші періоди. Наведені національні особливості популяризації дерев-пам'яток природи. На основі аналізу кадастрів ботанічних пам'яток природи України та Києва встановлено їх кількісний та видовий склад. Встановлені найбільш поширені (*Quercus robur*), поширені, менш поширені та рідкісні (*Buxus sempervirens*, *Catalpa bignonioides*, *Metasequoia glyptostroboides*, *Pseudotsuga menziesii*, *Rhododendron myrtifolium*, *Sequoiadendron giganteum* та

інші) види дерев-пам'яток природи, наведені основні проблеми щодо їхнього збереження. За типами вуличних посадок більшість дерев-пам'яток природи (68 %) – це солітери. Для оцінки обізнаності населення використано метод соціологічного опитування респондентів. Виявлені цінності вікових дерев, які є найбільш важливими для населення. Встановлено важливість обізнаності населення про вікові дерева через розвиток емоційного зв'язку з ними, що сприяє захисту дерев. Отримані результати можуть бути використані у подальшій заповідальній діяльності, при обміні досвідом науковців різних країн щодо збереження таких дерев, збагаченні інформації про особливості росту, історичні факти чи інші питання, пов'язані з цими деревами

Ключові слова: природно-заповідний фонд України; роди та види; збереження; охорона; популяризація; соціокультурна цінність