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IDENTIFICATION AND PRESERVATION OF CULTURAL AND LANDSCAPE IDENTITY – THE PLANE TREE PARK OF BUCHAREST

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Abstract

Urban green spaces are defined as city areas where complex interaction of environmental, human, socio-economic and cultural factors take place, that gives us a dynamic perspective, but with some stability, given by the customs and values of a society under transformation. The valuable urban landscape, both culturally and in terms of the quality of urban life, is a subject that can be approached among climate, social, and territorial changes attempt by the city in its evolution. Urban green spaces under increased real estate and social pressure are gradually diminished in terms of quality and value. This leads to focusing on elements that serve as memorial landmarks, heritage landscape that can define and characterize the evolution of a society. The secular trees, or those white aesthetic, historical, memorial and social value, are such cultural landmarks that require great attention, taking into account their value, doubled by the lack of a perspective to protect and preserve historical and landscape significance. In the current context, public or private green areas of Bucharest has a total of 110 specimens of protected trees, considered natural monuments, according to the List of protected trees, managed by the Romanian Academy. An urban green area less known but very valuable, containing a single area with almost a third of the total number of trees mentioned on this list, is represented by the area owned by the National Bank of Romania, located near the pier of Dambovita, better known by citizens as the place of sports competitions NBR Arenas. The 31 trees of the Platanus x acerifolia species present in this site require thorough research, are considered, in an advanced state of decay. Our study aims to raise awareness and advertise, this concentrated protected historic landscape site, in order to initiate a complex process of integrated and differentiated management of the tree vegetation of cultural identity and social values.

Key words*: regeneration, rebirth of value, urban historical reintegration, trees protection.*

INTRODUCTION

Urban green spaces have a large contribution in defining the quality parameters of social and cultural life, being a dynamic component of environment, under constant urban evolution at the same time with the society evolution.

Generally, we can talk about two basic senses of the quality notion:

-quality based on the understanding of the Aristotelian sense of the "quality-species" term, which defines the sense of being of a thing, as nature, the essence of the thing;

-quality defined by considering a thing like "good" or "bad" defining the "quality-value" term.

At the same time, we can talk about the primary and secondary qualities of landscaping, defined in terms of philosophy, the primary ones being intrinsic qualities, of real things and the secondary ones being those that have the power to bring us certain feelings (Stănescu, 2008). All these relations determine another category of quality, more special for a city, namely its inner energy, which defines and characterizes a city (Sandu, 1992).

In a city, urban energy and quality of life is supported and determined in a large scale by the dynamic component of the vegetation too, especially by tree vegetation, playing its part in regulating the urban ecosystem. The world becomes richer due to the memorable places where people design their life and constructions (Simonds, 1967). The ecological and cultural-historical principles of the building and analyzing urban landscapes lead to conservation and preservation measures, in case of valuable urban landscaping.

The management, based on the analysis and control of urban landscaping development, allows the controlled evolution of vegetal assemblies, based on the principles of globality

and continuity of the analysis, assessment and intervention over the vegetation.

Provided that the urban space has special features, given by the historical, memorial, ecological or social value, the urban vegetal assembly becomes heritage which can help in the interpretation of the society evolution, by understanding social, aesthetic and cultural concerns.

In the heart of Bucharest, very close to the "heart of the city", on the right side of Dâmbovița River, we have a very valuable landscape, dominated by some special historical plane trees, of the *Platanus* × *acerifolia* species, which actually gave the name of the land - the Plane Tree Park. The piece of land suffered progressive changes, currently belonging to the National Bank of Romania.

The current study aims to investigate the evolution of the site, analysis of the history and continuity of the site, identification of trees with historical, ecologic, social and memorial value, control and update of information included in the List of protected trees, related to the *Platanus* × *acerifolia* trees existing in the Plane Tree Park. After the heritage trees have been identified, the study aims for the future to continue the researches, to achieve a complex analysis of the dendrometric characteristics of each tree, determining the functional, aesthetic and memorial value in order to preserve and protect the heritage of this site.

All researches and analysis on the field and in the archives will lead to specific measures for the preservation and regeneration of the historical landscaping in the Plane Tree Park.

MATERIALS AND METHODS

Urban landscaping can be considered a symbol, a sensible unit, which interpretation is determined by the cultural experience, respectively of practices and events specific to communities (Majuru, 2012). At the same time, it is a specific layer accumulation of several practices, policies, customs, events which builds the memory of the place (Tudora, 2009).

Amid cultural accumulation and territorial changes, the site investigation method was focused on two important issues:

- studies and historic analysis of the landscape structures of the site - analysis of the urban area;
- studies dendrometric and visual analysis of the secular plane trees on the studied site.

The historical analysis was based on the archival studies of the place history, completed with the study and analysis on the field of the existing structure. The historical study analyses the evolution of the current territory of the Plane Tree Park, in order to identify the specific moments during its existence, as well as in order to raise awareness on the landscape heritage value of Bucharest.

The historical plans of Bucharest have been analyzed (1846, 1852, 1871, 1895, 1899 and 1911), together with the literature in terms of evolution of the public urban green space and of gardens of Bucharest.

Historical research started with the analysis of the most important structures - roads, benchmarks, nodes, limits, specific typology areas - which defined the mental map (Lynch, 1960), but also the physical and evolutional map of the place.

The historical analysis also indicated how the secular vegetation of the Plane Tree Park started and developed in terms of urban and social conditions on this location.

Nevertheless, the complex landscaping analysis methods conducted on the field referring to the historical vegetation were focused on dendrometric measurements, analysis to identify the aesthetic, historical and landscape values, on considering the state of health of the analysed trees.

A precise survey was conducted with the position of all plane trees, each tree analyzed was assigned a unique registration code, according to the vegetation inventory method (basic tool in Management of Urban Vegetation).

Tomography analyses were conducted for the internal structure of each historical plane tree log existing in the analyzed site. This complex analysis helped in identification of the internal gaps, of wood firmness, and finding hidden cavities which affect trees' stability and health.

All assessments and analysis performed were scientifically construed and they were considered as the first database organized on scientific grounds of the Plane Tree Park. This

particularly important document is the main tool used to prepare the Management and Integrated Plan of the Plane Tree Park.

RESULTS AND DISCUSSIONS

Analysis and historical studies

The analysis and interpretation of the historical plans indicated the evolution of the analysed space, from the peri-urban area to the modern area, emblematic of today's society.

In terms of historical period evolution, we can see the stratification of at least six determined period, with insignificant overlaying of years, when the current territory undergone significant changes:

- the first period -until 1870, indicates us a peri-urban area, affected by the constant flooding of Dâmbovița. The area is left somehow not systematized because the city not included Dâmbovița River. Starting with 1800, Bucharest inhabitants begin to capitalize the river's adjacent spaces, for leisure purposes. The land under study was overlapping the semi-agricultural piece of land existing almost two centuries ago in this location (Figure 1).

Figure 1. Bucharest Plan in 1846 - taken over from the Borroczyn Plan - according to the redo of drawings in 1911 coordinated by Cincinat Sfințescu (Source: www.ideiurbane.ro)

-the second period - from 1962 until 1895, when the first systematization of Dâmbovița river occurs and the land is designed as target range. The project coordinated by Major Papassoglu shows a space organized with an alley, bordered by a bilateral tree alignment, leading to the shooting gallery - "Tiru Gherman" (Figure 2). Dâmbovița is regularized, drained, registered in the land of the "Societatea de Dare la Semn", established by the ruler Cuza in 1862, the access was done by Notagiilor Street, part of the current Dr. Staicovici Street.

Figure 2. Bucharest Plan in 1871 - taken over from the Papassoglu Plan - detail of Green Color (Source: www.ideiurbane.ro)

-the third period - since 1890 until 1911, when final rectification of Dâmbovița takes place and when the main boulevards are drawn in the urban structure. We can see that the land of the "Societatea de Dare la Semn" is organized with alleys, pavilions, plantations and a pond. The streets and lots of the new district, Cotroceni are drawn (Figure 3 and Figure 4).

-the fourth period – 1912, the area is partially rethought in terms of functionality, the park is shared by Tenis Clubul Român (Romanian Tennis Club) and Societatea de Tir (Shooting Gallery Company), the previous landscape is changed.

-the fifth period - the interwar period - it does not bring any radical changes, the neighborhood is defined as street scanning field, Dr. Lister Streets appear, when the main entrance of Romanian Tennis Club is moved. In 1939, the tennis courts were taken over by ANEF, whipped out by the new political regime, nine years later.

Instead of the pond, we can see now a modern pool, on the east side, which will be opened until 1962.

-the sixth period from 1945 until 1990 – define the current configuration of the land, the Cotroceni Stadium is built (1950), the new

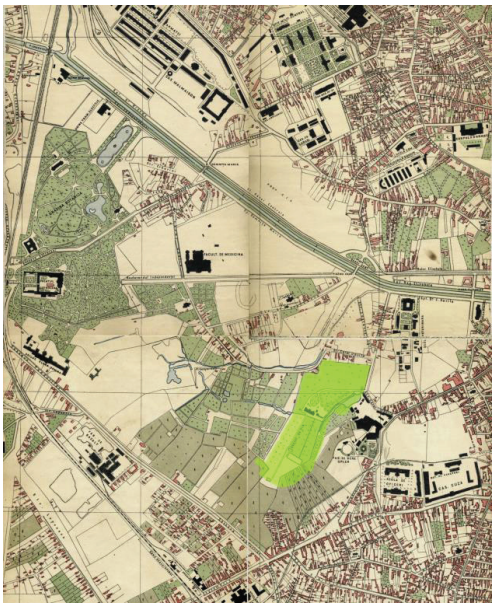

Figure 3. Bucharest Plan in 1895 – 1899
(Source: www.ideiurbane.ro)

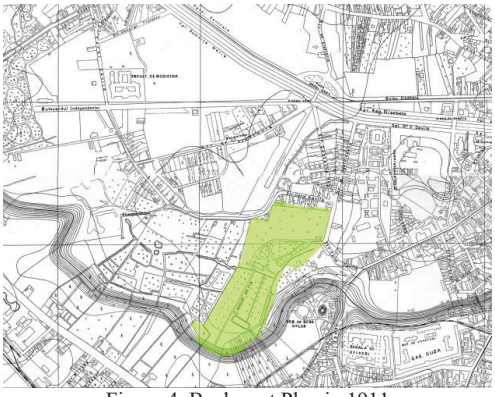

Figure 4. Bucharest Plan in 1911
(Source: www.ideiurbane.ro)

center of Victoria Socialismului is drawn and built now (1980).

Currently the piece of land can be accessed on the two main entrances (from Dr. Lister Street and Dr. Staicovici Street), a complex scanning field of roadway and pedestrian walkways, which serves the tennis courts, football fields, office spaces, sports halls, restaurant, guest house, outbuildings and annexes, seating areas, pavilion, gazebo, leisure areas.

Vegetation analysis

Valuable tree vegetation, of historic trees - *Platanus* × *acerifolia,* the species that named the place - the Plane Tree Park - it has 31 monumental trees, of different health stages.

The List of Protected Trees, under the administration of Romanian Academy, holds 39 historic trees of *Platanus* × *acerifolia* out of the total of 110 trees listed and inventoried in Bucharest. Out of the total of 39 protected plane trees, 31 are to be found in the Plane Tree Park, counting for almost 80% (79.8%). At the same time, out of the total of protected trees in Sector 5, more than 85% are located in the Plane Tree Park (Figure 5 and Figure 6).

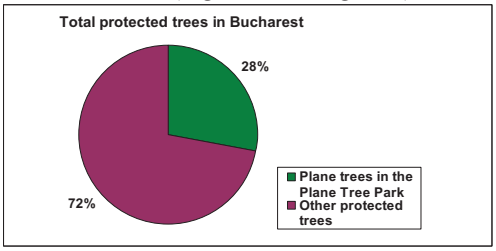

Figure 5. Percent of plane trees out of the total of protected trees in Bucharest

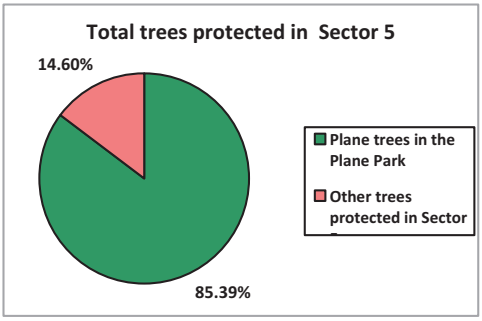

Figure 6. Percent of plane trees out of the total of protected trees in Sector 5 Bucharest

The analysis started in 2014 generated a Specialized Technical Expertise Report which indicated the health condition of the protected plane trees. Three major categories were identified for the physical health condition of the trees identified in the topographic plan: good, average and poor (Figure 7).

Each tree was analyzed individually following a scheme drawn according to the principles of Sustainable Management, issuing an Individual Analysis Sheet.

The following elements were analyzed individually: tree morphology (basic anatomical elements: stem, bark, crown), internal structure of the stem (considered

following the tomography analysis conducted), the health condition and aesthetic appearance.

Figure 7. Identification plan of the protected trees, assessment of their physical health condition

Technical Expertise Sheet for woody plants

Aria code: **11934**
Zone code: **A**
Tree code: **11934-A-Pa02**
Tree code on map: **A-Pa02**
Specie: **Platanus x acerifolia**
Protected Tree: **yes**

1. Dendrometrical measurements

Tree code	Circumference (m)	Height to crown base (m)	Crown width (m)	Total tree height (m)	Trunk numbers	Number of limbs
11934-A-Pa02	3.3	2.5	14	15	3	6

Aesthetic appreciation

Tree code	Aesthetic value	General tree condition	Stability	Recommended pruning
11934-A-Pa02	medium	good	yes	rejuvenation

Figure 8. Individual Specialized Technical Expertise Sheet with dendrometric recording and aesthetic analysis

Each *Individual Analysis Sheet* includes a series of recommendation and interpretations of the results analyzed and the measurements conducted (Figure 8 and Figure 9).

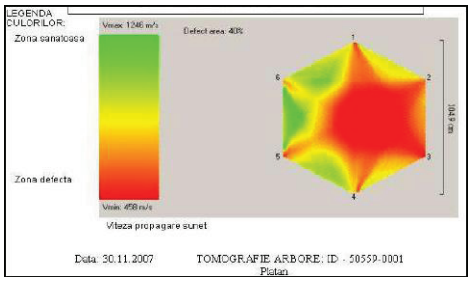

Figure 9. Individual Tomography Expertise Sheet

The historical trees were analyzed in full, all existing diseases and affections, growing and development anomalies were identified, as well as the condition and balance of the morphological elements. All information was recorded in hard support format and photographic documents, in order to set a customized diagnosis, for a tree to be given the proper treatment to improve its health condition (Figure 10).

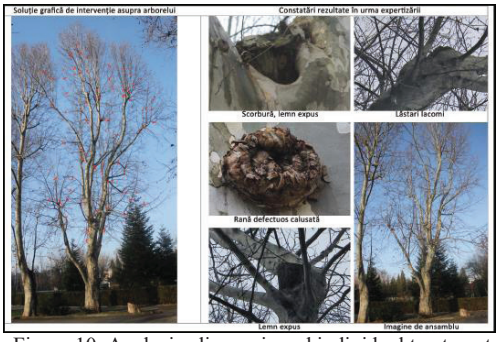

Figure 10. Analysis, diagnosis and individual treatment sheet

A part of the trees analyzed were seen in an advanced state of decay, as the main parts supporting it were not present. It meant they had to be removed, being considered as imminent hazard of safety for the buildings and pedestrians (Figure 11).

Protected trees, with significant health problems, in an advanced physiological state of decay (but with great historical value) were mentioned in special sheets (but not recorded as vegetal elements) under provisional preservation, with mandatory constant monitoring and they can be cut at first sign of possible hazard. The individual analysis sheet indicates actions to be taken to increase their safety and stability (Figure 12).

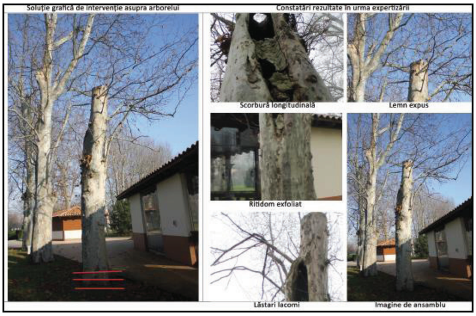

Figure 11. Hazardous Trees Identification Sheet

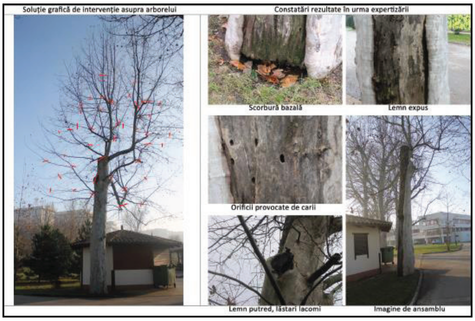

Figure 12. Individual sheet of protected trees with special monitoring condition

Out of the total of 48 plane trees analyzed, only 31 trees are noted in the List of Protected Trees. The individual analysis of the trees present in the studied site indicated that there are trees with the same landscape and historical value, but which are not mentioned in this list (Figure 13).

Figure 13. Individual analysis of the trees with similar value as the protected trees

Careful analysis of each tree provided primary information, centralized in complex inventory sheet. They include data related to the surface code, analyzed tree code (unique and individual), diameter of the trunk (measured at 1.3 m from base), crown inserting height, diameter of the crown, total height of the tree, number of branches (main, secondary), aesthetic value, intervention required, general health condition (pruning, treatment), type of intervention recommended, root system, approximate age (Figure 14 and Figure 15).

Cod suprafață	Cod zonă	Cod arbore	Statutul de ocrotire (da=ocrotit, nu=neocrotit)	Circumferința trunchiului (la 1.3m de la colet)(metri)	Diametrul trunchiului (la 1.3m de la colet)(metri)	Înălțimea de inserare a coroanei (metri)	Diametrul coroanei (metri)	Înălțimea totală (metri)	Număr de ramificații	Număr de șarpante	Valoare estetică	Stare generală	Verificarea stabilității	Ancoraje (tipul)	Tutori
11934	C	C-Pa25	nu	2.5	0.80	3	9	15	0	10	Medie	Medie	Stabil	Nu	Nu
11934	C	C-Pa26	nu	2.8	0.89	2	5.5	6	0	0	Nesemnificativa	Foarte rea	Relativ stabil	Nu	Nu
11934	C	C-Pa27	nu	3.1	0.99	6	9	16	2	7	Medie	Medie	Stabil	Nu	Nu
11934	C	C-Pa28	nu	2.9	0.92	6	9.5	17	3	7	Medie	Bună spre medie	Stabil	Nu	Nu
11934	D	D-Pa29	nu	1.3	0.41	5	9.5	15	0	28	Mare spre foarte mare	Excelentă	Stabil	Nu	Nu
11934	E	E-Pa30	da	2.5	0.80	6	8	15	0	12	Medie	Bună	Stabil	Nu	Nu
11934	F	F-Pa31	da	3.4	1.08	5	10	18	0	10	Medie	Bună spre medie	Stabil	Nu	Nu
11934	F	F-Pa32	da	3.6	1.15	6	11	20	3	10	Medie	Medie	Stabil	Nu	Nu
11934	F	F-Pa33	da	2.4	0.76	5	8	15	0	5	Nesemnificativa	Medie	Relativ stabil	Nu	Nu
11934	F	F-Pa34	da	3.1	0.99	3	8	16	3	7	Medie	Medie	Stabil	Nu	Nu
11934	F	F-Pa35	da	3.5	1.11	4.5	11	18	2	5	Medie	Medie	Stabil	Nu	Nu
11934	F	F-Pa36	da	2.2	0.70	2	8	13	2	4	Nesemnificativa	Medie	Relativ stabil	Nu	Nu
11934	G	G-Pa37	da	3.0	0.96	3	11.5	18	2	8	Foarte mare	Excelentă	Relativ stabil	Nu	Nu
11934	G	G-Pa38	da	2.4	0.76	4	10.5	18	2	6	Mare	Bună	Stabil	Nu	Nu
11934	G	G-Pa39	da	2.6	0.83	4.5	10.5	18	3	10	Mare	Bună	Stabil	Nu	Nu
11934	G	G-Pa40	nu	2.2	0.70	4	9.5	17	0	5	Medie	Rea	Stabil	Nu	Nu
11934	G	G-Pa41	da	2.5	0.80	4.5	10	18	0	6	Medie	Rea	Stabil	Nu	Nu
11934	G	G-Pa42	da	2.9	0.92	4.5	14	18	4	10	Mare	Bună	Stabil	Nu	Nu
11934	G	G-Pa43	nu	2.7	0.86	2.5	14	18	1	8	Medie	Rea	Relativ stabil	Nu	Nu
11934	G	G-Pa44	da	3.3	1.05	2	13.5	20	3	6	Foarte mare	Bună	Stabil	Nu	Nu
11934	H	H-Pa45	da	4.3	1.37	5.5	17.5	21	3	10	Foarte mare	Bună	Stabil	Nu	Nu
11934	H	H-Pa46	da	4.3	1.37	3.5	19	20	4	12	Foarte mare	Excelentă	Stabil	Nu	Nu
11934	I	I-Pa47	da	4.5	1.43	1.7	16	15	7	15	Foarte mare	Excelentă	Stabil	Nu	Nu
11934	I	I-Pa48	da	3.5	1.11	2	20	16	4	22	Mare	Excelentă	Stabil	Nu	Nu

Figure 14. Inventory Sheet

Cod suprafață	Cod zonă	Cod arbore	Statutul de ocrotire (da=ocrotit, nu=neocrotit)	Necesitatea tăierii	Tipul tăierilor	Patologie vizuală (Da/Nu)	Sistem radicular (profund / superficial)	Vârstă aproximativă (ani)	Observații
11934	A	A-Pa01	nu	Da	Întreținere/regenerare	Da	Profund	152.5	Scorbură bazală. Răni provocate de cicatrici necalusate.
11934	A	A-Pa02	da	Da	Întreținere/regenerare	Da	Profund	148.0	Răni cicatrizate și necicatrizate.
11934	A	A-Pa03	da	Da	Întreținere/regenerare	Nu	Profund	143.5	Tăierile severe au determinat numeroși lăstari lacomi.
11934	B	B-Pa04	da	Da	Regenerare/eliminare	Da	Profund	143.5	Foarte înclinat. Scorburi de dimensiuni mari.
11934	B	B-Pa05	da	Da	Întreținere/regenerare	Da	Profund	139.1	Răni necicatrizate. Scorburi.
11934	B	B-Pa06	da	Da	Întreținere/regenerare	Da	Profund	135.6	Înclinat. Răni necicatrizate.
11934	B	B-Pa07	da	Da	Întreținere/regenerare	Da	Profund	121.1	Răni necicatrizate de dimensiuni mari.
11934	B	B-Pa08	nu	Da	Întreținere/regenerare	Da	Profund	121.1	Cioturi necicatrizate.
11934	B	B-Pa09	nu	Da	Întreținere/regenerare	Da	Profund	130.1	Scorbură mare pe ax. Cicatrici dezgolite.
11934	B	B-Pa10	da	Da	Regenerare/eliminare	Da	Profund	83.7	Scorburi mari pe ax. Axul se termină cu un ciot dezgolit.
11934	B	B-Pa11	nu	Da	Regenerare/eliminare	Da	Profund	112.1	Lemn expus pe toată înălțimea, cca ¼ din suprafața ritidomului lipsește.
11934	B	B-Pa12	nu	Da	Întreținere/regenerare	Da	Profund	116.6	Carii. Toate șarpantele se termina cu ciot dezgolit.
11934	B	B-Pa13	da	Da	Întreținere/regenerare	Da	Profund	121.1	Lemn expus pe șarpante.
11934	B	B-Pa14	nu	Da	Eliminare	Da	Profund	103.2	Scorbură pe ½ din lungimea trunchiului.
11934	B	B-Pa15	da	Da	Întreținere/regenerare	Da	Profund	157.0	Neechilibrat. Șarpante cu lemn expus.
11934	B	B-Pa16	da	Da	Întreținere/regenerare	Nu	Profund	121.1	Răni mici necicatrizate.
11934	B	B-Pa17	da	Da	Întreținere/regenerare	Da	Profund	103.9	Răni mari necalusate. Ramura principală uscată.
11934	B	B-Pa18	nu	Da	Întreținere		Profund	67.3	Ramuri descendente. Ramuri despicate.
11934	B	B-Pa19	nu	Da	Întreținere/regenerare		Profund	71.8	Înclinat.
11934	B	B-Pa20	nu	Da	Eliminare	Da	Profund	121.1	Lipsă coroană. Carii. Lemn expus.
11934	B	B-Pa21	da	Da	Regenerare/eliminare	Da	Profund	116.6	Ax despicat cu lemn expus. Carii. Scorburi mari. Răni longitudinale.
11934	B	B-Pa22	da	Da	Regenerare	Da	Profund	116.6	Tumoare la 1.5m de la colet. Răni, cioturi dezgolite.
11934	C	C-Pa23	nu	Da	Regenerare	Da	Profund	143.5	Scorburi. Ciot apical dezgolit. Dezechilibrat.
11934	C	C-Pa24	da	Da	Întreținere/regenerare	Da	Profund	161.5	Răni necalusate. Scorburi. Dezechilibrat.

Figure 15. Inventory Sheet

The results of the research indicated valuable vegetable elements that are not protected, but also the presence of protected vegetal elements whose value is diminished, in low, irreversible psychological condition.

CONCLUSIONS

The impressive number of historical trees grouped in the land assessed can give us an idea about the importance and the heritage value of the analyzed site.

The valuable tree vegetation in the Plane Tree Park counts for almost 1/3 of the total of trees listed in the Protected Tree List (31 trees, out of the total of 110).

Nevertheless, another 17 trees of *Platanus* × *acerifolia* species found and analyzed in the

site, have aesthetic values and dendrometric consideration as the protected ones (Figure 16).

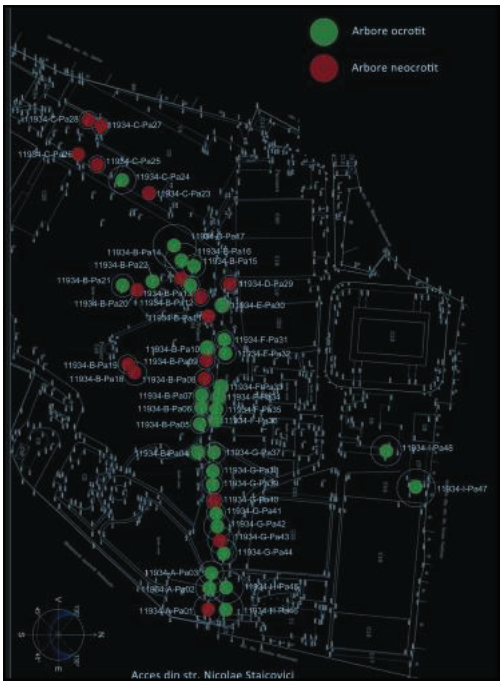

Figure 16. Plan for the identification of the protected trees

In total, the number of trees that can be considered protected, could be of 48, not 31, as they are currently listed in the Protected Trees List.

The classification of the trees into the Protected Trees List could follow a similar procedure listed in the methodological norms for the classification and inventory of historical monuments. This procedure is based on classification criteria, which assess the cultural significance and importance of the immovable assets, establishing the legal category and valuable group of the national cultural heritage which these assets belong to, respectively group A or B of historical monuments (landscape). Therefore, the classification of an immovable asset is conducted based on the following criteria:

a. Seniority criterion.
b. Criterion related to the artistic, urban (landscape) value.
c. Criterion related to the memorial and symbolist value.

These criteria, applied in line with the legislation of architectural historical moments could be slightly adjusted in order to be applied for landscaping of historical monuments.

The general health condition of the trees analyzed, protected or not protected, is poor, most of them indicating early signs of aging. A part of the trees existing, mainly historical plane trees, was presented even in the first stage of the site analysis (starting with the 19th century). The plane tree is a long-lasting species and the estimated age of the oldest trees (max. 180-200 years), does not explain the advanced grade of their physiological decay.

Related to the phenotype description of the species, significant differences were registered between the typo species and the species analyzed. Most of the trees present of the land indicate mainly vertical growing, while the typo species has large crowns, with horizontal growing.

The trees stability analysis indicated as main issue the internal cavities or even open cavities, some of them noticed on the field, others indicated following the tomography analysis.

Previous interventions (infilling, cutting) were severe, the trees reacted in uncontrolled growing of greedy springs, concurrent branches, terminal ends, with the internal wood exposed. All these interventions lead to the worsening of the plane trees physiological health condition.

All the trees examined were diagnosed and recommendations were issued for regeneration pruning and balancing of crowns, of disinfection and infilling of hollows and open cavities.

The analysis and measures were taken and organized in the first Tree Inventory Register, a basic document in planning the interventions and Landscaping Sustainable management. The integrated landscape management survey indicated the importance of constant monitoring of valuable plane trees, but also the program of required interventions, as a matter of emergency or immediate operations. The scientific system for the registration and inventory of each tree as settled. The results of the survey indicated 8 trees of *Platanus* × *acerifolia* species in a very poor condition, some of them should be cut immediately as there are facing a constant hazard of falling. In

the following current management stage, we will update the analysis of vegetation - once in 5 years - and the tomography analysis will be redone for the constant monitoring of the health condition of the historical plane tree in the Plane Tree Park.

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