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Arguments for Integrative Management of Protected Areas in the Cities – Case Study in Bucharest City

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Abstract

Protected areas should be considered as a complementary form of anthropogenic environmental intervention geared towards restoring its balance by removing the causes of its visible degradation. Taking into consideration the IUCN Red List of Ecosystems, the aim of the study is to argue the importance of integrative management of urban protected areas, based on a case study with respect to the Romanian capital (Văcărești wetland, in the built-up area of Bucharest city). The study objects are: addressing the conceptual issues of protected areas and in particular in urban areas; analyzing the geographical evolution of the study area (since 1700), as a determinant of the present situation; highlighting the relationships among biodiversity, ecosystem services, public use and social perception, as strong arguments in favor of the integrative management of the investigated territory. The research methodology was focused on reviewing national and international literature regarding protected areas (especially urban ones); a diachronic analysis of the study area identifying the evolution of human-environment relationships over historical times; applying the survey method in order to analyze the target group perceptions on the constraints and opportunities stemming from the urban protected area status of theVăcărești wetland**.** The main techniques employed for our scientific approach were the following: using GIS applications for diachronic and synchronic analysis; processing the semi-structured interviews in QSR NVivo 11 software; monitoring newspapers, TV channels, social networks and discussion forums. This analyses offered us opportunity to set up the main arguments for integrative management of the study area, under the circumstances of contradictions between the valuable natural and semi-natural potential and current anthropogenic and heterogeneous exploitation, leaded by the group interests.

Peer-review under responsibility of the organizing committee of ECOSMART 2015

Keywords: arguments, urban protected area, integrative management, Văcărești wetland, Bucharest, perception

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1. Introduction

1.1. Argument

The present study has theoretical and applicative importance for urban environment planning. It started from the media debate triggered in May 2012 by the paper titled "The Delta amongst the blocks" [1], published on the National Geographic Romania, which discussed the opportunity of setting up an urban protected area inside the built-up space belonging to the 4th sector of the Romanian capital. According to Ioja et al. [2], media conflicts usually erupt between the social groups directly affected by the specific issue (in this case the landowners), on the one hand, and other stakeholders interested by the respective topic for civic or political reasons (conservationists, the people residing in the adjacent areas, local authorities, NGOs, volunteers, academia representatives, etc.).

1.2. Conceptualization

In Romania, the urban protected area is a rather new concept, being almost absent from the common vocabulary and having a relatively restricted circulation in the bussiness and academic environments. On international level, the term is well known in those countries that set up and adequately arranged natural and semi-natural territories with ecological value and remarkable potential for biological exploitation, which were threatened by the urbanization process and/or by the public intensive use (Sweden, Norway, Austria, England, Columbia, Argentina etc). According to Trzyna, 2014 [3], urban protected areas are protected areas situated in or at the edge of larger population centres. They meet IUCN's definition of a protected area and can be in any of its six Management Categories. In governance terms, most of them are the responsibility of national, provincial, or local governments; others are managed by NGOs or institutions and some are collaborative or community efforts. They do not include "conventional urban parks with lawns, flowerbeds and sports fields" [3]. The integrative management of urban protected areas (intending to unify separate things), a concept used in the context of the present research, points at completing and atadding value to the urban environment by a new form of land administration, ecologically protective and having educational value. According to the Explanatory Dictionary of the Romanian Language [4], the term integrative means "to complete" or "to supplement". The belief that social, cultural, and economic systems are intertwined with biological problems and their solutions is widely accepted by the conservation community. Authors from many discipline shave called for holistic, multidisciplinary approaches to conservation [5, 6, 7, 8, 9], argued that decisions on ecosystem management should be ecologically sustainable, socially acceptable and economically feasible. If ecosystems and human communities are interdependent, their durability must be managed simultaneously.

1.3. The issue of setting up urban protected areas

Nature parks, natural reserves and the protected areas in general should be seen as an additional form of anthropogenic intervention on the environment, aimed at restoring its balance by removing the visible causes of its degradation. In Depraz's [10] opinion, the creation of a natural protected space does not imply the complete withdrawal of the people from the landscape, but rather a new form of public use of nature. In other words, it is a different kind of semi-artificialization, by which the landscape is loaded with new social representations and a particular manner of sustainable management.

The approach of establishing a protected area gives rise to multiple conflicts of interests, especially when the territories concerned are located in the proximity and, even worse, in the perimeter of the human settlements. According to von der Dunk et al. 2011 [11], the conflicts stemming from landuse occur "whenever the stakeholders interested in landuse and/or its associated resources (…) have incompatible interests with regard to the same assets. The most frequent conflicts falling in this category are the conservation ones, which arise from the contradiction between the prevailing scientific arguments and those invoked by the locals [2]. Under the circumstances, in order to prevent the failure of the protection and conservation measures, it is necessary to identify all potential conflict situations that might occur among the stakeholders, both in the design phase and afterwards, when the protected area is already in place. Irrespective of the category to which belong, the protected areas must be territorial units where landscape will gradually be exempt from human pressure. The purpose is to reach, on medium term, a situation almost similar with the natural state (renaturalization, ecological restructuring of the environment).

The current tendency in the expansion of the protected area network in Europe takes into account the conservationist issue for the urban environment. The idea of "natural or semi-natural protected area" comes from the states lying in Northern Europe. A good example in this respect is the Urban Nationla Park "Ekoparken" in Sweden, created in 1995. This includes wooded areas, lakes and swamps, but also cultural protected areas. Ekoparken ensures a vital ecological corridor for the expansion of a large number of flora and fauna species, being the habitat for about three fourths of the total number of flora and fauna species in the central part of Sweden [12]. Despite the manifold advantages that Ekopark offers to the population, it was criticized from the point of view of city development, because of the environmental constraints it imposes on the landscape: the regulations forbid certain urban improvements, for instance the industrial and/or residential projects. For these reasons, Ekoparken is the only park of this kind in Sweden. Later on, this concept was taken over by Finland, whichset up five urban national parks: Hämeenlinna (2001), Heinola (2002), Pori (2002), Hanko (2008) and Porvoo (2010) [13]. In South America, the most interesting example of urban protected areas is found in Argentina, more exactly within the Bueons Aires metropolitan area. This is the municipal ecological reserve called Barrio de Puerto Madero – Costanera Sur, Ribera Norte –Vicente López set up in 2009 [14].With regard to the urban territories that might become protected areas, the Finish Ministry of Environment [15] thinks that the main criteria that a territory needs to meet in order to aspire to such a statusare the following: *diverse environments* (natural areas important for urban biodiversity conservation; parks and picturesque green areas or areas with aesthetic significance; buildings or other cultural-historical symbols of national or local importance); *location within the urban areas* (to be integrated in the urban structure, to be part of the urban core or to lie in its immediate vicinity); *sprawl and interconectivity* (the green areas inside the urban protected areas should be large enough and rather well interconnected, so that to allow the residentscross them by foot in order to reach other neighborhoods); *ecology and continuity* (the protected areas should also be ecological corridors facilitating the movement of wild species and they should have good connections with the natural or rural areas lying outside the urban territories). On the other hand, urbanization can have negative effects on the protected areas in the cities. Then main advantages and constraints that accompany the process of setting up urban protected areas are shown in table 1.

Table 1. The advantages and constraints that could appear due to the urban protected areas designation (processing by sources [3, 13, 14])

No	ADVANTAGES	CONSTRAINTS
1	Ecological reconstruction	Financial interest of landowners and real estate investors
2	Ecosystem services	Uncontrolled tourism, encouraged by the lack of adequate management
3	Species preserve	Opposition of landowners
4	Environmental education	Wilde fire
5	Job creation	Extreme events and disasters
6	Recreation for people with low incomes	"Gatewaycommunities" some grow to become ugly, congested places that make it hard to appreciate the protected area next to them [3].
7	Voluntourism	Informal settlements
8	Diversification of tourism offer	Inadequate management of beggars and waste

1.4. Integrative management – A paradigm of setting up protected areas in the world

According to a definition released by IUCN, the protected areas are created especially for preserving biodiversity and natural and cultural values. But the management objectives may be very diverse from territory to territory, even though nature conservation is a must for every protected natural area. This is due to the fact that the idea of protection has evolved considerably over the last half century. The radical conservation paradigm, often requiring the removal of resident populations outside their traditional habitat, with the purpose of restoring the ecological integrity of protected areas, was sometimes used perversely by a number of policies, as a pretext for relocating the local populations [16]. The issue of forced eviction, pushed to its limits, has drawn the attention to the social conflicts, which must be taken into account when defining the best management practices for a protected area. Actually, the social problems exist more or less within every protected space; every territorial system has to a certain extent its own economic and social problems concerning the exploitation of environmental resources, the

circulation restrictions and the quality of the habitat, but there are also legal, cultural and identity problems that sometimes are extremely sensitive.

In this context, the term «integrative paradigm» introduced by Rodary and Castellanet [17], represents a double conceptual revolution: the expansion of nature protection objectives so that to foster a change in the environmental ethics and human integration in nature, in accordance with the principles proposed by egocentric approaches. Therefore, in the light of this paradigm, the accountability for managing the protected areas lies both with the scientists and the local stakeholders (integrated management), the final purpose being the sustainable development of the territories and the mitigation of man-environment conflicts. Besides, the need for an integrated approach to the management of protected areas was revealed by the IUCN as early as 1980, through the slogan of the World Conservation Strategy: "Conservation and development" [16]. The strategy was reissued in 1990, which further emphasized that conservation idea does not preclude development, but on the contrary, it may support it.

The IUCN commissions and publications on protected areas largely mirror the orientation of this institution towards the integrative paradigm [16]. The publications of the last two decades explore the following: the economic value of protected areas [17]; sustainable tourism in nature parks and reserves [18]; the involvement of local people in the management of protected areas [19, 20, 21]; and the cultural and spiritual value of natural places for the autochthonous communities [21, 22]. All these studies reveal that the economic, social and cultural problems of the protected areas are essential in approaching their issues.

Theoretically, all types of protected areas should evolve towards the new integrated management model envisaged at the moment when they were created. Many times, however, this does not happen, because of some institutional barriers or local conflicts that might undermine the good intentions of the managers or other stakeholders who show concern for the protected environment. Thus, when the forced evictions of landowners coexist with the pleas for a model of conservation sensitive to the needs of local population, contradictory situations may occur at local level. One of the types of territories that may be confronted with conflict situations among the target groups in the process of setting upare the urban protected areas.

Taking into consideration the IUCN Red List of Ecosystems [23, 24], the aim of the study is to argue the need for an integrated management of urban protected areas, in the context of a case study concerning a territory in the Romania's capital city (Văcărești wetland area). The study objectives are the following: 1. addressing the conceptual issues of protected areas in general and of urban protected areas in particular; 2. assessing, based on cartographic analyses, the time evolution of the man-environment relationship, as a determinant or pre-requisite of the present situation; 3. highlighting the relationships among biodiversity, ecosystem services, public use and social perception, as strong arguments in favor of the integrated management of Văcărești wetland.

2. Study area

The investigation area is represented by the Văcărești wetland, a "sui-generis" landscape unit belonging to the built-up area of the Romanian capital, which overlaps the southern compartment of the Bucharest Plain. The Cotroceni-Berceni, Cotroceni-Văcărești [25] or Berceni-Ciorogârla plain [26] stretches between the Dâmbovița valley to the north and the Sabar valley to the south. The elevations decrease from west (90 m) to east (60 m), the largest hypsometric steps being those of 70-80 m and 80-90 m (Fig. 1). In the Cotroceni-Berceni area, which includes the investigated ecosystem, the altitude of the ground is 70-75 m. The altitudinal variations are explained by the presence of shallow valleys and compaction areas, as well as by human interventions [27, 28]. Stretching on about 180 hectares, south of the Dâmbovița valley, the Văcărești Wetland area is pejoratively called "the Danube Delta's Showroom" (due to the similarities with the Danube Delta's landscape). The works for reclamation and improvement (embankment) of the swampy lands were initiated in the communist period and consequently, the large and unhealthy Valley of Weeping became the Văcărești Pit. In the 1980s, Ceaușescu was willing to turn the place into a recreation lake and sports facility. The lacustrine basin, which was to create a more favorable microclimate and to become a recreation area for the Bucharest citizens, has never been filled with water, both because the improvement works have not been completed and because the hydrotechnical studies have shown that hydrostatic level will rise and will flood the basement of the adjacent blocks [29]. In the last two decades, the project has been abandoned, which has led to the appearance of a novel lacustrine ecosystem in the basin of the former Văcărești Pit. At present, it shelters about 100 bird species (hawks, ducks, and pheasants), reptiles (water snakes,

tritons, water turtles) and mammals (foxes, polecats, otters or muskrats) [1]. Discovered by photographers, biologists, ecologists or geographers, this space has recently come to the attention of the NGOs (WWF, National Geographic Romania, "Pro Parc" etc.) and the Ministry of Environment, which initiated the steps to turn it into a protected area. In 2014, April 29, by the approval of the General Council of Bucharest City, the place was proposed as urban natural park. Leaders of important environmental organizations like RAMSAR and WWF, consider the project a remarkable example of cohabitation between an urban agglomeration and a spot of wild nature.

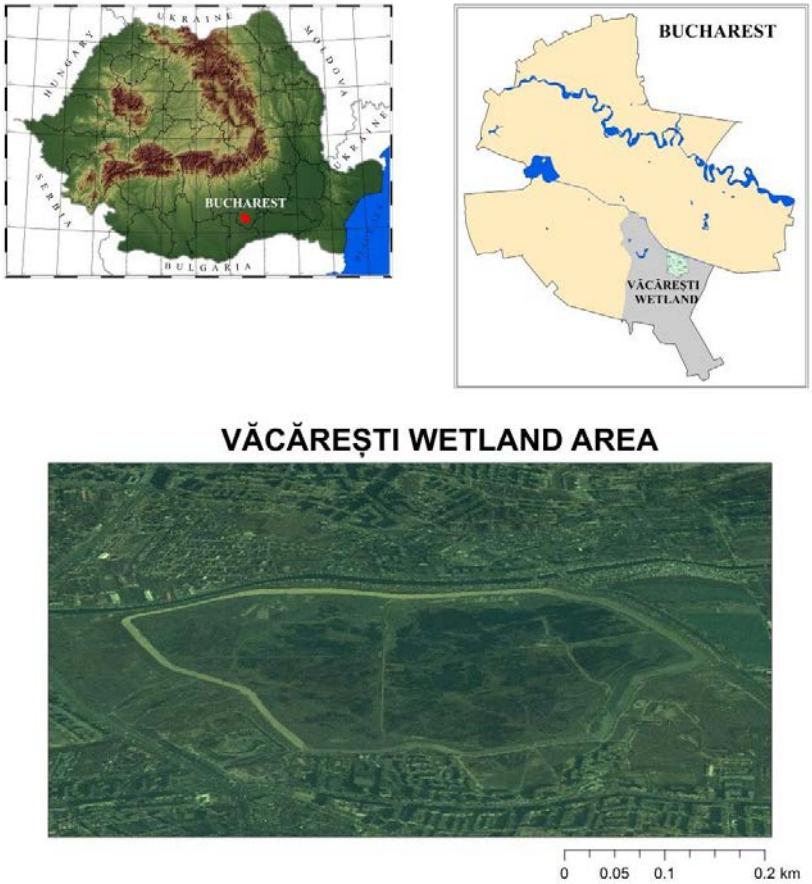

Fig. 1. Geographical location of study area

3. Research methodology

The research methodology was based on the following:creating a database by collecting historical and statistical information as study background;making a diachronic analysis of the study area with a view of identifying the evolution of the human-environment relations in historical times (since 1700 to present); applying the survey method in order to analyze the target groups' perceptionon the constraints and opportunities of urban protected area status for the Văcărești wetland. The main techniques used to argue the integrative management of Vacaresti wetland were: the review of national and international literature dealing with protected areasin general, andwith urban protected areas in particular;applying GIS techniques for diachronic and synchronic analysis, in order to detect man-environment historical relationship (the cartographic materials were accomplished based on the data collected from the Library of the Romanian Academy – Table 2); processing the semi-structured interviews in QSR NVivo 11 software, which were applied to the target groups involved in the research and in public use and

administration of the investigated territory(the representatives ofthe scientific community, the people living in the proximity of the study area, the NGO's members, and the local authorities); monitoring newspapers, TV channels, social networks and discussion forums in orderto detect the perception of local authorities, the scientific community, local community from the proximity of the study area, and the landowners, on the appropriateness/constraints of Vacaresti wetland perspective as urban protected area.This analyses offered us opportunity to set up the main arguments for integrative management of the study area, under the circumstances of contradictions between the valuable natural and semi-natural potential and current anthropogenic and heterogeneous exploitation, leaded by the group interests.

4. Results and discussion

4.1. Urban protected areas – A challenge for Romania

By its diverse physiography, Romania is the only state that holds five of the 11 European biogeographical regions, namely the Continental region, the Alpine region, the Pannonian region, the Black Sea region and the Steppic region. The remarkable ecodiversity and biodiversity explain the present share of 20% that protected territories have in the total area of the country. All these territories can be included in the following management categories: IUCN protected areas, areas of community interest or Nature 2000 sites, and World Heritage Sites, established within the framework of some programs and international conventions: MAB UNESCO, Ramsar Convention, European Charter of Geoparks [30]. All these bring a major contribution to the in-situ protection of the vegetal and animal species included in the IUCN Red List of Threatened Species.

At present, the protected areas in Romania occupy periurban or extra-urban areas, with landscapes that are found in stages of biostasy and rhexistasy. In reality, however, a number of urban ecosystems may have ecological functions of interest for the society; these may be turned to account by setting up urban protected areas to serve as models of sustainable ecological management. This approach is consistent with the new recommendation formulated by the IUCN regarding the preservation of valuable and novel ecosystems, which through improper management may suffer significant degradation or irreversible changes. It is also the case of the Romanian capital, which makes the subject of heated debates in the media, because of the recent approach of turning the wetlands of the Văcărești area, lying in the southern part of Bucharest, into an urban nature park.

The indirect observations made on cartographic materials (Table 2) and the direct ones made in the field, during the interval August 2012-September 2015, the bibliographic review, the processing of the semi-structured interviews (applied to the residents in the proximity of the study area, to the NGO members, to the representatives of the academic environment and to local authorities), as well as the monitoring of media articles and discussion forums on social networks, allowed us to set up the main arguments for the integrative management of the Vacaresti urban protected area.

4.2. The dynamic of man-environment relationships within the study area – prerequisites for the present landscape

The literature consulted and the processing of cartographic materials for the interval 1791-2008 (Table 2) highlighted the land use changes in the investigated territory, as well as the conditions underlying the turning of an intensively humanized space into a unique semi-natural ecosystem. Its aesthetic and functional value is even greater, as the ecological reconstruction of the Văcăreşti area occurred naturally, due to the self-regulatory capacity of natural ecosystems. Consequently, nature has reclaimed more and more lands according as the people have abandoned their socio-economic activities (town planning and agriculture). Therefore, the Văcăreşti wetland area is a shining example of how nature rejoins its rights as soon as man ceases to exert pressure on the environment.

The dynamics of the man-environment relationships over a time span of nearly two centuries (1790-2008) was revealed in figures 2 and 3. The lake has practically come into existence due to the many springs in the area. According to Bryan [34] classification, these could be channel springs - a particular type of springs that occur within the floodplains due to depressions caused by channel cutting of river. Their activity has intensified in the last 30 years, because of the cuttings and underground excavations, made with the aim of expanding the residential neighborhoods and the underground train lines [29].

Table 2. The cartographic database used in research

No.crt	The cartographic document	Scale	Year	Source details
1.	Specht's Map (3 sheets)	1:57,600	1791	Library of the Romanian Academy
	Map of Bucharest (4 sheets)	1:10,000	1852	Library of the Romanian Academy
	Map of Southern Romania, De Fligely, sheet IX/7, accomplished by Szathmári	1:57,600[31]	1864	Library of the Romanian Academy
	Map of Bucharest	1:5,000	1911	The collection of the National Library
	The Military Map of 1954[32]	1:20,000	1954	Accomplished by the Defence Ministry of the Soviet Union in Lambert-Cholesky projection and subsequently in Stereo-70 projection
	Military Topographic Map	1:25,000	1980	Military Land Survey Directorate
	Military Topographic Map	1:25,000	1989-1990	Military Land Survey Directorate
	Zonal Urban Plan	1:5,000	2001-2002	Bucharest City Townhall
	orthorectified aerial imagery of Bucharest City	scale 1:5,000,.		Prepared by the National Agency of Cadaster and Real Estate Advertising
The maps and other image data were scanned at a resolution of 150 dpi and then were saved as .jpg and .img for being georeferenced in Stereo-70 projection. Subsequently, all the elements necessary for creating a database were digitized with the purpose of analyzing the dynamics of the environmental factors in the study area. For the digitization process, the ArcGIS 10.1 software was employed[33].				

The 2D and 3D models (Fig. 2 and 3) of the Văcărești Wetland in 1800 to 2008 clearly show the landscape changes that occurred in this area, which resulted in a biotope defined by an alternation of water bodies with swampy areas, providing shelter and food to a remarkably diverse biocenosis. A 4-stage evolution of the area could be outlined by a short time-series analysis of the maps below:

1) 1791-1864: the swampy area in the SE of post-medieval town of Bucharest has progressively disappeared due to numerous ancient hydrotechnical works. In time, a large pastureland has replaced the swamp.

2) 1864-1911: the abandonment of drainage works resulted in a new invasion of water and semi-natural vegetation in the area.

3) 1911-2001: The Văcărești area was subject to several significant changes: after being drained again, it became suitable for habitation and the urban built-up area extended over it; the construction of the embankment which hosted the Văcărești Reservoir until the 2000s began in 1986;

4) 2001-present: the recovery of semi-natural ecosystems after the reservoir was emptied.

4.3. Link between biodiversity / ecosystem services / society - arguments for integrative management of wetland Văcărești.

Biodiversity and ecosystems are important in themselves, but they also supply a vital flow of commodities and services that is very important for the people. Unfortunately, the development is more and more associated with a decline of diversity and a shrinking of the natural systems – or in other words of biodiversity. Part of this problem consists in the fact that although the economic and social welfare of the people depends both on biodiversity and the continuous flow of the numerous ecosystem services offered by it, these are generally considered predominantly public goods, lacking any concrete economic value. The benefits that nature brings to society are often ignored and are seldom taken into account for day-to-day decisions whenever a compromise is at stake.

The Văcărești wet ecosystem includes all the links of a complete food chain. Evidence for this are the flora and fauna species, indentified by the biologists and ecologists of the Văcărești Nature Park Association [35]. According to the biogeographical regionalization proposed by Soo [36],1944, (who was cited later by Călinescu [37], 1969), by its geographical location the study area belongs to Central Europe, more exactly to the Moesic province, having some Balkan-Moesic influences [38]. The specific biome of the Bucharest Plain is represented by the nemoral zone, more specifically by the sub-mesophillic and thermophillic oak forest (*Quercuscerris* and *Q. frainetto*). According to biogeographic regionalization of the European continent, the studied area belongs to continental biogeographical region, with some steppe influences. Against this background, the presence of water bodies and wetlands contribute to the diversification of vegetal and animal life, which explains the presence of a number of species with azonal distribution.

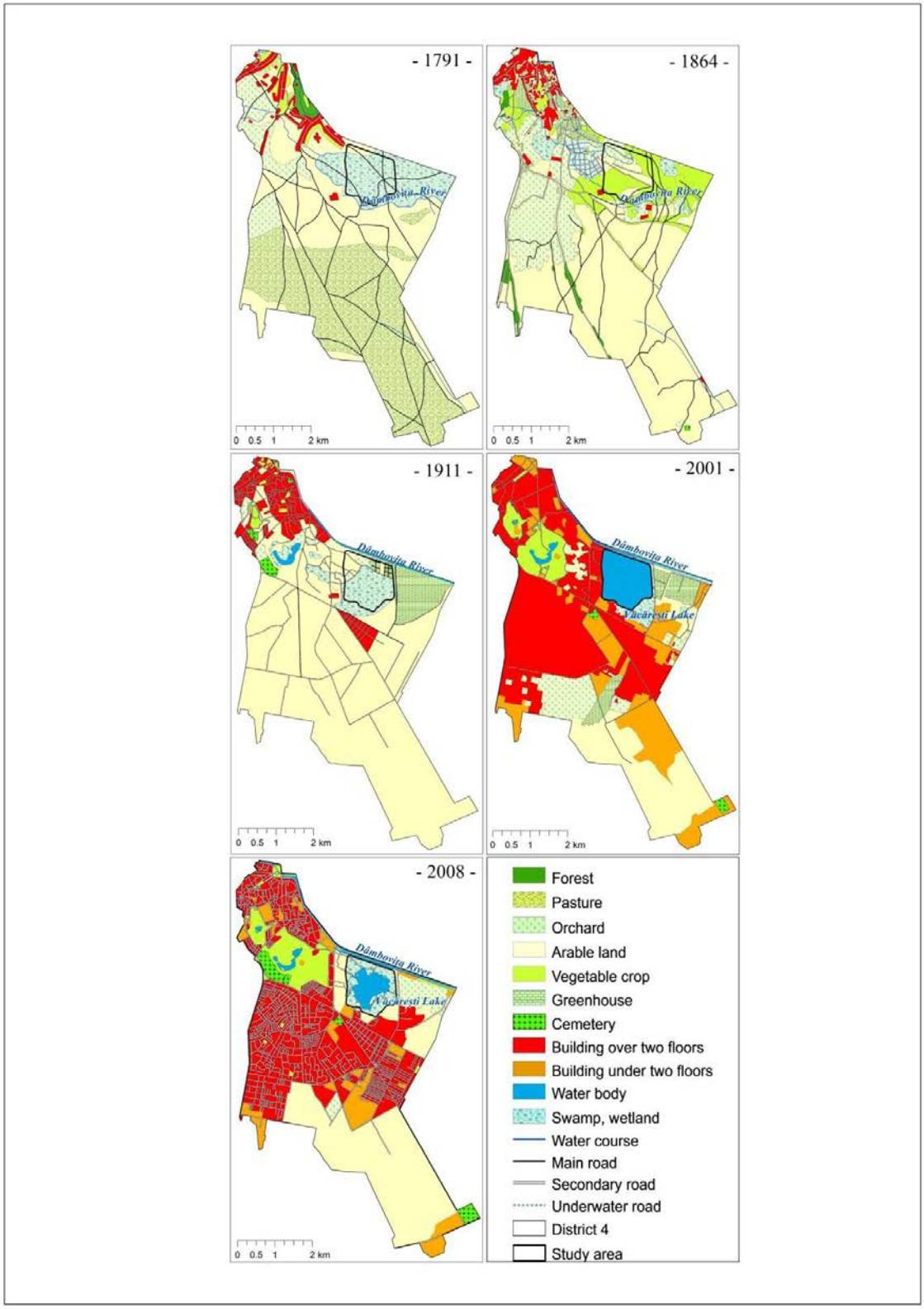

Fig. 2. The dynamic of man-environment relationship in the Vacaresti Wetland area and its proximity

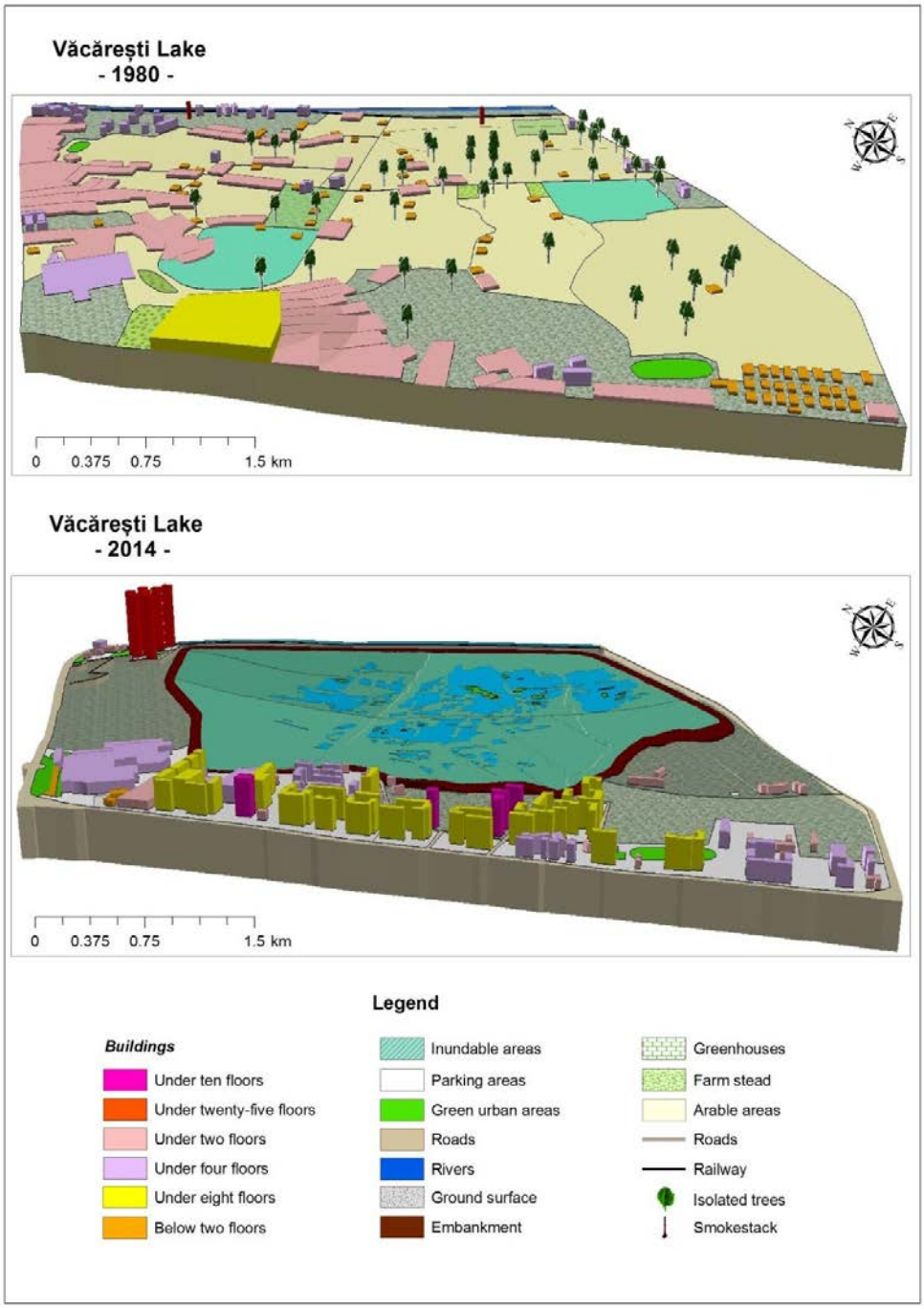

Fig. 3. 3D dynamic model of the man-environment relationships in the Vacaresti Wetland

Of the floristic species, we can mention the European frogbit (*Hydrocharis morsus-ranae*), the common bladderwort (*Utricularia vulgaris*), a carnivorous plant, with a nice yellow flower, the water lily (*Nymphaea alba*), the purple loosestrife (*Lythrum salicaria*), and the water soldier (*Stratiotes aloides*), which is an aquatic plant. The

representative avifaunistic species include the long-eared owl (*Asio otus*), the blue tit (*Parus caeruleus*), the common kestrel (*Falco tinnunculus*), the common buzzard (*Buteo buteo*), the goldfinch (*Carduelis carduelis*), the magpie (*Pica pica*), the coot (*Fulica atra*), the pheasant (*Phasianus colchicus*), the falcon (*Falco tinnunculus*), the grey heron (*Ardea cinerea*), the little egret (*Egretta garzetta*), the Marsh-harrier (*Circus aeruginosus*), the little bittern (*Ixobrychus minutus*), the pied flycatcher (*Ficedula hypoleuca*), and the whinchat (*Saxicola rubetra*). As far as the mammals are concerned, these are represented by the least weasel (*Mustela nivalis*), the fox (*Vulpes vulpes*), the otter (*Lutra lutra*), etc. Likewise, the researchers from the Antipa Museum have identified and described several species of amphibians, some of them very rare, as well as species of reptiles and fishes [35].

By its geographical location, the investigated territory has become part of the green axis that includes the Carol I Park (situated in the western part of Sector 4, on the Filaret Hill) and the Tineretului Park, from which the Văcăreşti Wetland is separated by the Văcăreşti Avenue (fig.4). The creation of this green axis is part of the "ofensive" aiming at increasing, through various means, the green urban areas. This approach, sugesstively called "the Green Guerilla", made its way in the United States in 1973. This consists in setting up as many large green areas as possible, especially within the large urban agglomerations [39]. The ecosystem services provided by the Văcăreşti wetland consist primarily in raising the urban green space by approximately one square meter per inhabitant. By their total area of 183 hectares (according to the *Draft Decision regarding the Approval of the Administrative Area that is to Become Part of the Protected Area Văcăreşti Nature Park – April 29, 2014* [40]), the blue-green oxygen-generating areas of the park could increase the quality of the urban living in Bucharest, through the ecosystem services summarized in Table 3.

Table 3. Ecosystem services provided by the urban blue-green space

No.	Category	Type of services
1.	Ecological	mitigation of human impact on the environment; chemical, physical and bacteriological purge of the atmosphere; climate gets milder; natural autochthonous vegetation and fauna are preserved and enhanced;
2.	Social	contributes to the formation of the cultural identity of the area, as part of its unique profile, giving the place a new meaning in the mind of local communities [41]; the urban population health state is enhanced, while the people who use to come to this area get a feeling of wellbeing [42]; the place is good for recreation and leisure; contributes to the environmental education of children and to their mental and social development [43, 44, 45]; the aesthetic valences mitigate the impression of rigidity and aridity induced by the built-up areas.
3.	Economic	the value of urban areas rises[44,46], and implicitly the value of the properties located nearby [46]; the quality of living increases [47].

The benefits offered by the blue-green ecosystem of the nature urban parks, in terms of the three functions (ecological, social and economic), are also stipulated in the Recommendation No.R (86)11 of the Council of Europe [47]. The paradigm of integrative management is indispensable for the Văcăreşti Nature Urban Park, if we take into account a number of variables like the land ownership regime, the current landuse, the presence of water bodies and the remarkable biodiversity. At the same time, one should not neglect the recent conflict that broke out in the media between the stakeholders involved in turning Văcăreşti wetland into an urban protected area: local authorities, governmental officials, NGOs, academics, landowners, local people and Bucharest residents.

But what is certain is that the integrative management of the proposed urban protected area would increase the metropolis brand of the Romanian capital, through the adoption of a new model of urban development promoted at international level, called green city, biourbanis [48, 49, 50, 52] organic urbanism [50, 51, 52]. This model is meant to facilitate the access of citizens to the *intra muros* nature. However, even though at institutional level the territory was proposed as urban nature park, half a year after the event the situation in the field seems to have remained the same, because the legal void concerning the integrative management of the study area perpetuates the man-environment conflicts (arson of hygrophilous vegetation, waste pollution, homelessness etc.) [53].

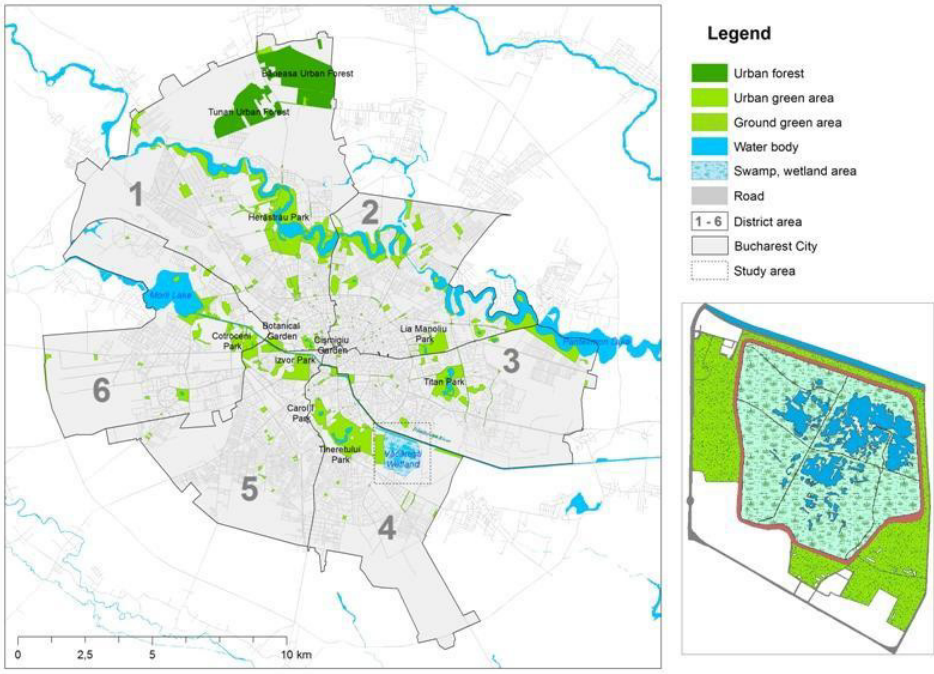

Fig. 4. The location of Vacaresti wetland within the blue-green corridors in Bucharest city

The separation of natural and cultural values is often artificial and hard to accomplish, especially when nature has been significantly altered by the human activities over the centuries, as it happened on most of the European continent. This is the reason why most European protected areas preserve both natural and cultural values, the nature parks and the protected natural landscapes included in the IUCN's fifth category being a good example in this respect. The main objective of the nature parks is to connect people with nature, even in those environments where artificialization is very high, as in the case of the Romanian capital.

4.4. The perception of the target groups regarding the opportunity of setting up the Văcăreşti Natural Urban Park

The studies undertaken by the IUCN's specialists on the profile and benefits of creating a network of urban natural parks reveals that these areas have a major contribution to the improvement of human health and the raising of people's welfare[3]. On the other hand, however, the urban natural parks also impact the social context, in as much as they provide the optimum framework for social interaction and community cohesion. At the same time, they promote the connections with other natural territories by becoming corridors and buffer areas (blue-green axes, useful from the ecological, psychological and landscape points of view), which support the economic revival by making the city more attractive. As seen in figure 4, the two most important water bodies along Dâmbovița River - Morii Lake and Văcărești Wetland - harmoniously balance the blue component of the south corridor (Dâmbovița Corridor).

As any pioneering approach generates skepticism and suspicion, the idea of an urban natural park is regarded differently by the main target groups. The motivation is largely subjective, being influenced by the existing relation between the interviewees and the investigated territory. The sociological survey is the main investigation method of the opportunities and constraints encountered in the public use or administration of an urban territory highly artificialized and densely populated. The people's perception on the management of Văcăreşti wetland as an urban natural park was analyzed through the instrumentality of two techniques: monitoring the social networks (facebook, twitter, and youtube), newspapers and TV channels, in order to analyze the perception of the former landowners, the local authorities and the public opinion in general regarding the present and future status of the study area (a

synthesis of these is shown in Table 4); running a semi-structured interview on subjects selected from the following target groups: people residing in the vicinity of the study area (Calea Văcăreşti – 2, Şoseaua Olteniţei – 2 and Splaiul Unirii-Asmita Garden rezidential complex – 2), people residing in other neighborhoods – 2, environmental activists (Save or Cancel Associations – 2, Văcăreşti Natural Park – 1, „Save Bucharest" Association – 1) and academia representatives (Faculty of Geography – 3 and University of Architecture and Urbanism – 2, both in Bucharest). People perceive this project according to their relation with the respective territory (landowner, local resident, entrepreneur, local authority, environmental activist, or representative of the academic community). The sociological survey (interview), accomplished on target groups, reveals that most of the population supports the setting up of the urban natural park, as this kind of landuse will allow the existence of a clean, safe and beneficial place both for biodiversity and for the human communities. It can be observed that people, belonging both to local authorities bodies or NGOs both genders, no matter the age, having higher education expressed their support for a protected area, thinking at the insufficient green space in Bucharest, the lack of eco-recreational facilities and the need of conservation of nature. Academic representatives are interested in conservation, but with a scientific management focused more on protection than leisure and a careful attention on water dynamics and alien species. Local community representatives have no opposition of creating the park, but a general skepticism was found regarding the success of the project, because of the existence of real estate interests that will prevail for conservation efforts. The interview items are shown in table 5.

Table 4. A synthesis perception of the target groups interested by the present and future status of the Văcăreşti wetland, mirrored by the online environment

Date of accessing	Online source	Main ideas and comments
May 27, 2012	adevarul.ro/news/societate/ultimii-salbatici-mijlocul-bucurestiului-1_50ae83567c42d5a6639d725a/index.html,	"The permanent dwellers of Văcăreşti area (the last savages within Bucharest) are 30 people who live in tents or shacks made of wood, cellophane, old carpets and linoleum)"
August 6, 2013	http://adevarul.ro/news/bucuresti/balta-vacaresti-1_5200fb65c7b855ff56ae9d0e/index.html	Văcăreşti pool. How arose a piece of heaven downtown?" How beautiful and unique is this place! How good it would be if it were protected by law! It attracts tourists worldwide, at least for its singularity!" "In order that this place may become a civilized park the authorities should clarify the legal status of the land" "That place is private property!" "The landowners and the claimants should thank those people who intend to set up the Văcăreşti urban protected area. By doing this, they will receive money from the state for the lands that otherwise are useless for them. Land improvement costs more than constructions."
August 7, 2013	http://adevarul.ro/news/bucuresti/bucuresti-balta-vacaresti-berlin-1_52028e82c7b855ff56b555a1/index.html	NGOs: "The park would make Bucharest equal to Berlin. Văcăreşti pool – it is not a mere swamp. It shelters from birds protected worldwide to the tiniest flower on the planet". Landowners: "the idea is nice, but compensation is needed".
August 9, 2013	http://adevarul.ro/news/bucuresti/balta-vacaresti-vacaresti-1_5204703ec7b855ff56bcdb64/index.html	Dan Munteanu, ornithologist": "Văcăreşti is an ecosystem that has the characteristics of a natural wild habitat. According to Romanian law, pit Văcăreşti would fit best in natural park" (IUCN 5th category).
February13 2014	http://www.ecopolis.org.ro/blog/2014/02/proprietarilor-din-vacaresti/	"The Ministry of the Environment should obey the law by sending the land to the restitution commission, in order to be allocated to its rightful owners"; "People have not received compensations". "The former landowners must receive compensations for the lands they had in the area." Comment of a citizen from Bucharest: "I watch very carefully the project of setting up a natural park on the Văcăreşti pool area and I congratulate the initiators! I think it is the duty of Bucharest's mayors to offer this park to its citizens, as long as the city is suffocated by concrete and ugly apartment blocks".
March 18, 2014	http://www.romaniapozitiva.ro/bucuresti/anunt-catre-proprietarii-din-parcul-natural-vacaresti/	The rightful owners have not received the lands confiscated abusively during the period March 1945 – December 1989.

	http://adevarul.ro/news/bucuresti/parcul-natural-vacaresti-despre-dureaza-infiintam-parc-bucuresti-duceti-va-munte-nu-oras-1_553e5fedcfbe376e359d2369/index.html April27, 2015	"Undoubtedly, Văcăreşti area will be one of the most innovative projects in the world concerning the wetlands" Mr. Tobias Salathe, member of Ramsar board and Senior Adviser of Ramsar. The reply of the environmental protection official in the local town hall: "Go in the mountains, not in the city! Up there you can make natural parks, but here in Bucharest is impossible!"
July 13, 2015	http://adevarul.ro/news/bucuresti/parcul-natural-vacaresti-vi-e-alte-tari-1_55a39cf9f5eaafab2c86f2ea/index.html	Văcăreşti Natural Park -What is the situation in other countries? Examples of best practice in other European countries and beyond (LWC London, Vienna, Costanera Sur etc.)

Table 5. The interview items

1.	Respondent education
2.	Current occupation
3.	You know the current situation of Văcăreşti wetland?
4.	What do you think about the initiative of creating Văcăreşti Urban Nature Park?
5.	Which are the positive aspects of protecting area creation?
6.	Which are the negative aspects of protected area creation?
7.	What do you consider to be the main impediment for natural park creation?
8.	How do you see the evolution of the Văcăreşti wetland: a) if it will be declared as urban natural park? b) if it will maintain the current status?
9.	If you were asked to express in a referendum your opinion on the creation of Văcăreşti Natural Park, which will be your decision?

In fact, the target groups' perception on Văcăreşti wetland management is suggestive revealed by the "words cloud" model, processed in QSR NVivo 11 software generator (Figures 5, 6). Nevertheless, the former landowners, discontent with the loss of certain financial advantages that they might have in the event they could sell the land, are reluctant to the idea of conservation. Although, usually, the ownership rightover the land prevails, in certain situations, when the general interest is at stake, the abandoned lands or those disputed in justice or having uncertain owners may be turned into green areas, often without the permission of theowners. This is in accordance with the Green Guerilla concept, coined by Liz Cristy and her Green Guerilla group in 1973, prior to an initiative of turning a huge derelict land in New York City into a genuine garden, based onvoluntary work [54]. Also, the comments made in the virtual environment about the future functionality of the derelict area surrounding Lake Văcăreşti are virulent, their authors protecting the interests of both parties. The mostvehement, who oppose the idea that Lake Văcăreşti be turned into an urban protected area, are the owners of the lands situated on its banks, who seek to obtain short-term benefits by selling their properties to the potential urbaninvestors. As a matter of fact, part of the land had already been sold before the real estate crisis began. Presently this area is occupied by the "Asmita Garden" Housing Estate (the three tall towers), which also hosts the Văcăreşti Nature Park Observatory.

5. Discussions

Conflict negociation is an important aspect for the creation and management of urban protected areas, the more so as these are situated in highly anthropogenic environments. In the process of landuse planning, conflict negociation can be considered a useful tool for the amicable settlement of the issue at stake by finding compromise solutions [55].The tensions generated by the project of setting up the protected areasare not specific only for urban landscape. Thus, in the Putna-Vrancea Natural Park (Romania), the conflict broke out when the Scientific Council of the park rejected several times the request of the local authorities to be allowed to build holiday houses and tourist facilities in the areas sheltering wildlife water resources. In the end, after several rounds of negociations the stakeholders reached a compromise solution [56].

According to Tudor et. Al [55], in order to anticipate the conflict in the planning process, it is important to pursue the following steps: analyzing factors contributing to conflictuality, because each land-use conflict is distinct and emerges from specific local social, economic, and environmental interactions; understanding conflicting land-use relationships and spatial arrangements; mapping conflict potential, useful in the context of competing landscape services [56, 57].

Fig. 5. The “words cloud” of academics, environmental activist,local authorities

Fig. 6. The “words cloud” of local resident, landowner, entrepreneur

According to their location, wetlands can be categorised into different types. These considerations define urban wetlands as a separate domain from non-urban wetlands. Although urban wetlands are protected areas and have the same physical conditions and benefits as non-urban wetlands, in the urban context they are exposed to a variety of harmful impacts, which deteriorate them and are making them disappear. Since wetlands are categorised according to their location, the structure and function of coastal marshes within port cities may be very different from those of wetlands located in interior land in intensively developed cities [58]. For instance, in Bogota, the capital of Colombia, the authorities raised the issue of expropriating the wetlands in order to preserve the specific ecosystems and to use them for recreation and environmental education [59]. According to Gravari-Barbas, 2002 [60], patrimonialization allows the rooting of an item into a particular area thus enhancing its originality.Approaching the landscape as aheritage resource having a protection and conservation value, will diminish the interventions that might encourage conflicts [2].

The approach of setting up urban protected areas has demonstrated its social-economic usefulness in many countries. The ecological reconstruction of the semi-natural habitats and the conservation of the natural ones have had a positive effect on the flora and fauna biodiversity of the urban environment. In this way, the green city [51] concept is supported by the expansion of the areas meant for recreation and pleasure, in a psychological and health-generating environment with a high degree of naturalness, as well as by the creation of an ecological education center, an in situ laboratory, with cognitive and educational valences, superior to the teaching done in school environment [52]. Thus, in the year 2000, the London Wetland Centre came into being in Great Britain, by turning four disposed water tanks into a natural area of 40 hectares, functioning as wetland, which shelters about 170 bird species every year. The whole complex dedicated to nature, where one can also find an ecological education center, is visited every year by approximately 200,000 people. Sir David Attenborough, the famos BBC host, declared the following: “London Wetland Centre is the ideal model of coexistence between man and nature in the 21st century” [61].The photographer Helmut Ignat, collaborator of National Geographic Romania, believes that “London Wetland Center” (declared in 1912 as the Best Reserve in the United Kingdom) is one of the world’s models that might

inspire scientists to plan and arrange the Văcăreşti Natural Park [61] (Figures 7,8). Vienna, the city occupying the leading position in all the tops dealing with the quality of life, ensures every citizen 120 m^2 of green area! Apart from the superb gardens and conventional parks, there are also thousand of hectares of natural protected areas.

Urban parks may contribute to the global image of the city; they can become iconic logos (like Cape Town or Rio de Janeiro) or local sources of income (Nairobi), but sometimes they are simply neglected by the decision-making bodies in the rural environment (Mumbai). The town-planning integration of the protected areas may be a factor of cohesion and coherence at local (Rio de Janeiro) and even national level (Cape Town), but at the same time it may act as a tool of spatial and social segmentation (Mumbai), whenever the local or national policies disregard this approach [61, 62, 63]. As long as the cities continue to sprawl, we must not dismiss the idea of creating new natural spaces within the urban tissues or even in their cores. Likewise, we need to make nature more accessible for the people by ensuring information and education whenever possible. Connecting people to nature should be an imperative for the whole conservation movement and urban protected areas represent the most effective way to do this[3]. According to Ioja et al. [64], green areas (especially those located near the schools) are most frequently used for teaching activities (in environmental sciences, geography, and biology).

So far, Romanian legislation has no specific regulations with regard to natural or semi-natural urban protected areas, because this topic is new for the ecosystem protection in Romania. The Romanian legislation is limited to regulations regarding the management and public use of the blue - green areas, seen as a component of urban infrastructure. It should be emphasized that, in Romania, the planning system is not always appropriate for complex issues under today's socio-economic realities [65]. Stakeholders participation should be increasingly taken into account as a tool for promoting the integration of local people and protected areas with a view to minimize the existing conflicts and their negative effects. Participation is broadly considered an important factor in nature conservation. The pilot project for establishing an urban protected areas in Bucharest city requires overhaul of legislation on protection of natural and / or semi-natural components of urban ecosystems. The main attributes of urban protected areas, which can be valued by an integrative participatory management are summarized in Table 6.

Table 6. The main attributes of urban protected areas

No	Some attributes of urban protected areas, which can be valued by an integrated participatory management
1.	To Promote human health and well-being. Promote connections to other natural areas.
2.	To help infuse nature into the built environment and break down the cultural barriers between the ‘natural’ and the ‘urban’; they often define a city’s identity.
3.	To offer opportunities to learn about nature and sustainability.
4.	To attract substantial numbers of national and international tourists.
5.	To Manage wildfires.
6.	To reduce impacts of noise and artificial nighttime light; topromote appreciation of natural sounds and the night sky.
7.	To Provide access for all; reach out to diverse ethnic groups and the underprivileged.
8.	To cooperate with institutions that have complementary missions; to encourage and help natural history museums, zoos, aquaria and botanic gardens to provide information and exhibits about nature and conservation challenges in their regions.
9.	To cooperate with universities in training managers for urban protected areas; to facilitate use of these areas for academic research and advanced learning; to help disseminate and archive research results.
10.	To learn from others’ experience with collaboration; to take advantage of people with entrepreneurial skills and experts in convening and negotiation.

Source : Processing after [3]

Conclusions

The status of urban protected area of Văcăreşti wetland implies a multitude of varibles, which must be taken into account in the management plan. These are the following: the geographical location within the urban built-up area, which generates multiple pressures on the protected natural components; the historical evolution of the investigated territory; and the divergence of opinions among the stakeholders (landowners, environmental activists, researchers, local residents, entrepreneurs, local authorities, and tourists).

Diachronic analysis revealed a novel dynamics of Văcăreşti wetland during the interval 1791-2008, triggered by its uncertain, controversial status. The cartographic materials accomplished show that the mosture regime of the wetland recorded a number of temporal fluctuations. Thus, Văcăreşti wetland occupied the largest area in 1791, 1911, 1990, 2001 and 2008 (with a maximum in 1791). As far as the body of water is concerned, this had a variable

dynamics, being influenced by the embankment works carried out during the communist period (1988), when the lacustrine depression was flooded only once. The largest area of the lake (excluding the land covered by hygrophile vegetation) was recorded in 1990 and 2001.

The start of the approaches for creating an urban protected area in the perimeter of the wet ecosystem developed spontaneously on Lake Văcăreşti territory, has generated heated debates among the target groups, which is why the authorities must undertake a thorough analysis of all the variables involved in this approach. At the same time, considering that Romania's capital city is growing more and more crowded from the housing perspective, the setting up of Văcăreşti wetland would offer a number of advantages. These are the following: the urban regeneration of an area that currently is unhealthy and unworkable; "pro homine' – "pro nature" integrative management of a semi-natural biotope; the setting up of a recreation place for nature lovers and people with low incomes; the diversification of tourist offer; pollution reduction and the increase of the quality of life. However, there are also potential risks that are represented by the landowners' interest to sell the restituted properties, the increase of uncontrolled tourism, and especially mass tourism, as well as the persistence of promiscuity, inasmuch as for the time being, the permanent users of the territory adjacent to Lake Văcăreşti are the homeless, who have built their favelas-type shacks on the lake banks [53].

As Ernesto Enkerlin Hoeflich (Chair IUCN World Commission on Protected Areas) stated, "urban protected areas can help bridge the gap between the compelling requirement of conservation and the social and economic imperatives of our times" [3]. The experience of other states in creating urban protected areas confirms the possibility to tackle such an approach in Romania as well, the more so as the expansion of the urban oxygen-generating areas may be seen as a counteroffensive against the rapid sprawl of the urban built-up territories.

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