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ASSESSMENT OF LANDSCAPE COMPONENTS IN COMANA NATURAL PARK

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Abstract

The approach consists in proposing an assessment method regarding landscape typologies and components, applied in Comana Natural Park, located 20 km south of Bucharest, in Giurgiu County. The research methodology is focused on assessing the share of the individual landscape components in each type of landscape identified. Thus, the components of the landscape are grouped in a tabular analysis into two broad categories: natural and anthropogenic, with specific subcategories: relief, soil, water, vegetation and sunlight for the natural category; infrastructure and architecture for the anthropogenic one. Each subcategory varies depending on the type of landscape, e.g. vegetation varies from forest to agricultural or palustrine. Following the assessment of the components, the anthropic impact level and the diversity index result for each type of landscape. Within the analysis, six types of landscape have been identified: forest, palustrine, agricultural, fallow, old rural, recent rural. After assessing the frequency of the landscape components two categories have been identified: common components (frequently found) and specific components (found only in particular cases). Both groups include natural, anthropic or mixed elements. The study brings in new approaches in identifying and assessing the determining factors in terms of landscape identity and typology, deepening the relations between the different components of the landscape.

Key words: *Landscape Assessment, Landscape Typologies, Landscape Identity, Natural Heritage, Comana Natural Park.*

INTRODUCTION

According to the European Landscape Convention launched in Florence in 2000 and ratified by Romania in 2002, the signatory states are committed to: "a) (i) to identify its own landscapes throughout its territory; (ii) to analyze their characteristics and the forces and pressures transforming them; (iii) to take note of changes; b) to assess the landscapes thus identified, taking into account the particular values assigned to them by the interested parties and the population concerned" (CE, 2000). Unfortunately, the implementation of provisions at national level is deficient and the landscape assessment studies in Romania are isolated, being realized mostly in the academic environment.

In this context, a priority in initiating steps for identifying, mapping and assessing landscapes is researching sites which belong to the natural and cultural heritage. One such case is Comana Natural Park, the largest wetland in Bucharest metropolitan area, which includes valuable landscape both at natural and anthropogenic level.

Comana protected area was declared a natural park in 2004, on an area of 24,963 ha. The park includes 8 communes with a range of cultural and historical heritage objectives, Comana and Neajlov River - a Ramsar and Natura 2000 site, Comana Forest - including 2 floral reserves (Ruscus aculeatus and Paeonia peregrina).

MATERIALS AND METHODS

The methodology is focused on the assessment of the relationship between typologies and the specific components of the landscape. Every landscape typology is assessed in terms of the characteristic components within a tabular analysis.

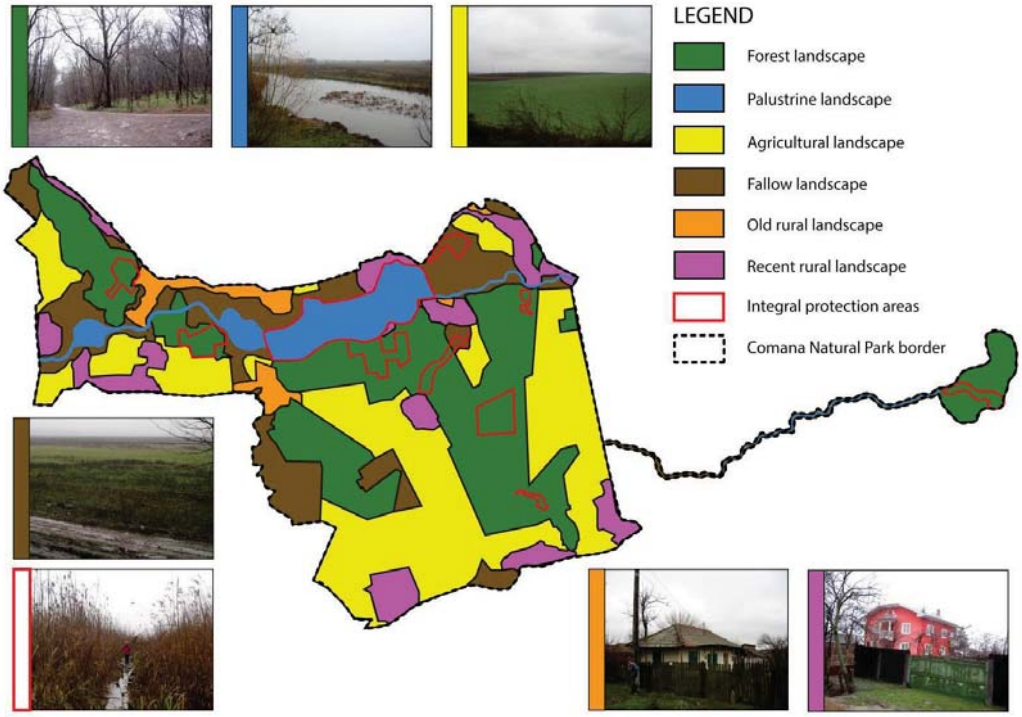

Figure 1. Landscape Typologies in Comana Natural Park

The individual components of the landscape are divided into two broad categories: natural and anthropogenic, with specific subcategories: relief, soil, water, vegetation and sunlight level for the natural category; infrastructure and architecture for the anthropogenic one. Each subcategory contains different components depending on the type of landscape.

Following the assessment of the components for each type of landscape, the anthropic impact level and the diversity index result. The anthropic impact level is determined through the ratio between natural and anthropogenic elements of each landscape. The diversity index results based on the proportion of the components encountered. The last part of the study includes an analysis of the frequency of each component found in Comana Natural Park depending on landscape typologies and on the total area.

The final results concluded two main categories of landscape components: common factors and specific factors. The first category comprises the most frequent landscape elements, while the second one includes the rarest landscape components in Comana Park.

RESULTS AND DISCUSSIONS

Following the site assessment and mapping, 6 landscape typologies resulted in Comana Natural Park: forest, palustrine, agriculture, fallow, old rural, recent rural. Of the 6 landscape types, the forest and palustrine landscape include integral protection areas (flora and fauna reserves within the forest landscape and avifauna reserve within the palustrine landscape) (Figure 1).

After analyzing the landscapes distribution, the agricultural (34%) and forest (28%) typologies resulted as the dominants. The fallow (15%), the new rural (11%) and the palustrine (8.5%) landscapes presented an average share. The lowest share resulted for old rural landscape (3.5%) (Figure 2).

The first step in landscape typologies assessment was to identify the presence of landscape components for each of the 6 cases. In the tabular analysis, for each type of landscape natural components (relief, water, soil, light) and anthropogenic characteristics (architecture and infrastructure) have been identified (Figure 1). Depending on the natural

Landscape components			Forest	Palustrine	Fallow	Agricultural	Old rural	Recent rural		Frequency depending on typologies	Frequency depending on natural park area
NATURAL	Relief	Flat								58%	42%
		Hilly								42%	58%
	Soil	Brown-red								83%	91,5%
		Alluvial		SF						17%	8,5%
	Water	River								42%	30%
		Marsh		SF						25%	22,5%
	Vegetation	Forest	SF							17%	28%
		Palustrine		SF						17%	8,5%
		Agricultural								42%	49%
		Rural								42%	22%
	Light	Shade	SF							17%	28%
		Partly shade								58%	37%
		Sunny								33%	49%
ANTHROPIC	Architecture	Traditional					SF			17%	3,5%
		Post-bellum								33%	14,5%
		Post-1990						SF		25%	13%
	Infrastructure	Gravel roads								33%	38,5%
		Paved roads								58%	46%
		Bridges								33%	18%
		Railroads								25%	30%
Anthrpization level			9%	4%	16%	19%	45%	45%			
Diversity index			35%	32,5%	30%	25%	47,5%	50%			
Typologies distribution			28%	8,5%	15%	34%	3,5%	11%			

SF - Specific factor (specific landscape components for certain typologies)

Figure 2. Landscape components assessment depending on landscape typologies

- anthropogenic ratio and on the variety of landscape elements, the diversity index and the anthropic level impact resulted. Thus, the dominant components revealed the following indicators (Figure 2):

- Forest landscape: hilly relief, red-brown soil, forest vegetation, shaded areas, gravel roads; Anthropization: 9%; Diversity: 35%;

- Palustrine landscape: flat relief, alluvial soil, Neajlov River, Comana Marsh, palustrine vegetation, partly shaded areas, wooden decks; Anthropization: 4%; Diversity: 32.5%;

- Fallow landscape: flat and hilly relief, red-brown soil, herbaceous vegetation, sunny areas, paved roads, bridges, railways; Anthropization: 16%; Diversity: 30%;

- Agricultural landscape: flat and hilly relief, red-brown soil, agricultural vegetation, sunny areas, paved roads, railways; Anthropization: 19%; Diversity: 25%;

- Old rural landscape: flat relief, red-brown soil, rural vegetation (orchards, vegetable gardens, etc.), sunny and shaded areas, traditional and post-bellum architecture, paved and gravel roads; Anthropization: 45%; Diversity: 47.5%;

- New rural landscape: hilly and flat relief, red-brown soil, rural vegetation (orchards, vegetable gardens, etc.), sunny and shaded areas, post-bellum and post-communist architecture, paved and gravel roads, railways, bridges; Anthropization: 45%; Diversity: 50%;

The last phase of the study is based on assessing the frequency of components within the 6 types of landscape. Thus, depending on the results, two broad categories of anthropogenic and natural components of the landscape have been identified: common factors – frequently encountered in Comana Natural Park in general and specific factors – rare ones, representative only for certain landscape types within the studied area (Figure 2). The first category includes: red-brown soil, flat and hilly relief, partly shaded areas, paved roads, hilly relief, the Neajlov River, agricultural vegetation, rural vegetation. The second category includes traditional architecture, post-1990 architecture, shaded areas, palustrine vegetation, forest vegetation, alluvial soil, Comana Marsh (Figure 3).

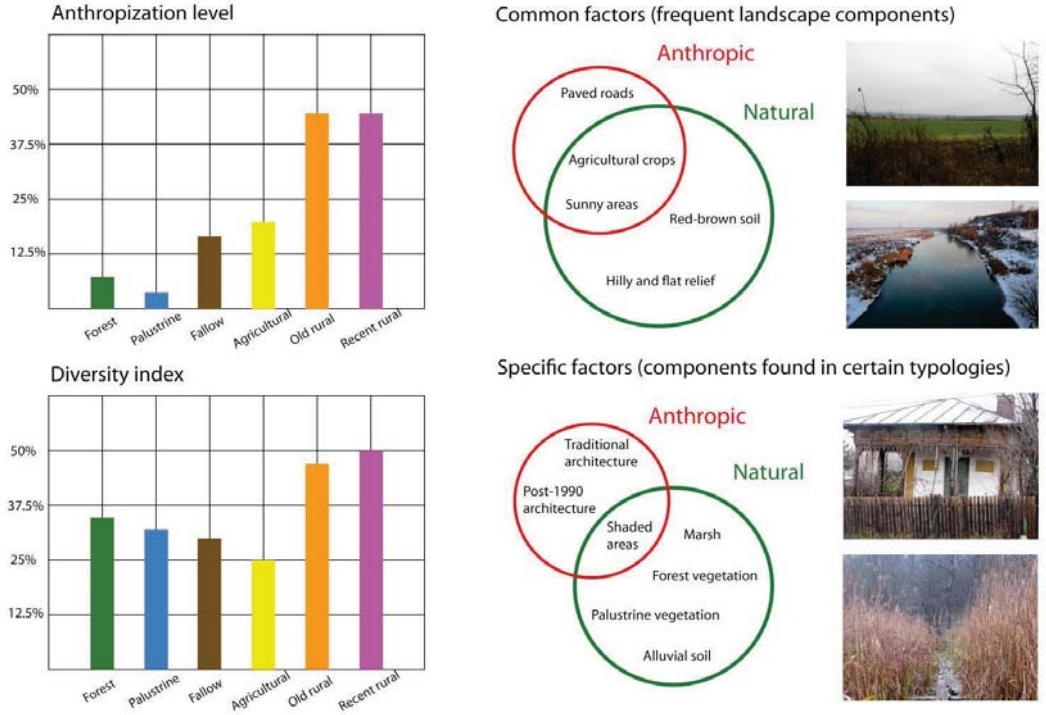

Figure 3 – Common and specific factors in landscape typologies in Comana Natural Park

CONCLUSIONS

The study aims to identify common and specific components of the landscape in Comana Natural Park and proposes a new approach in the assessment of landscape typologies. The importance and originality of the research consist of proposing a comprehensive and integrated analysis method addressing the complex dimension of the landscape. The method complements the sphere of knowledge in the field of landscape assessment by introducing a new approach in quantitative analysis. Its results highlight the qualitative dimension of landscape components. The innovative character of the analysis consists in identifying common and specific factors to certain types of landscapes depending on their frequency within the site, correlated with the spatial distribution of the typologies, the anthropization level and the diversity of landscapes. The results of the proposed method highlight the common elements which define the general character of the landscape in the studied area and determine the particularizing character of typologies. Thus, the results can be integrated into management and local development strategies, including tourism promotion through place branding initiatives. Both specific landscape factors and common ones should be considered within landscape conservation and protection measures for Comana protected area. The presented landscape assessment method can be applied at different scales, from local to territorial level, in both anthropogenic and natural environments. Also, this approach can be developed in order to be integrated in various landscape studies and strategies.

REFERENCES

Comana Natural Park Administration, 2013. Integrated Management Plan for Comana Natural Park

Council of Europe (CE), 2000. European Landscape Convention, Florence

Criveanu I., 2010. Protected Areas – Course Notes, "Ion Mincu" University of Architecture and Urban Planning, Bucharest

LaGro J., 2008.Site Analysis: A Contextual Approach in Sustainable Land Planning and Site Design, Ed. Wiley and Sons, Hoboken, New Jersey