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METHODS OF SUSTENANCE AND RESERVATION OF ECOSYSTEMS AND THEIR COMPONENTS

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GIS MODELING OF GREEN INFRASTRUCTURE OF MEDITERRANEAN CITIES FOR MANAGEMENT OF URBANIZED ECOSYSTEMS

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Green infrastructure is one of the most important components of the urban environment which severely affects the quality of human life. Green spaces can be a tool for maintaining the integrity and resilience of urban ecosystems. Both continuous research of the structure and functions of urban green infrastructure and monitoring of its quality are necessary in terms of optimization of the urban environment.

Using the example of the Mediterranean city of Malaga (Spain), as one of the leading "smart" cities in Europe, three methodological approaches to assessing the spatial configuration and structure of green spaces and fragments of the natural landscape of the city are considered. Modern methods of GIS modeling are applied to assess the green infrastructure of Malaga in terms of land cover characteristics (using CORINE Land Cover), the potential quantity of ecosystem services (using Urban Atlas), and configuration, fragmentation, and spatial structure of green spaces (using GuidosToolBox). Based on the method of Morphological Spatial Pattern Analysis (MSPA), the main cores, islets, and bridges of green infrastructure are identified, and the connectivity and fragmentation of green spaces are assessed, them being critically important for determining the unity of the ecological framework. The quantitative characteristics of green infrastructure are given, which are potentially comparable at different levels of land cover studies. The study results are given based on a combination of several methods that allowed to analyze the territory at different levels of spatial analysis and to determine the "backbone" areas of the green infrastructure network.

Keywords: urban green infrastructure, GIS modeling, CORINE Land Cover, Urban Atlas, connectivity, fragmentation, MSPA.

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