Preparatory activities for the care and maintenance of historic parks and gardens: a case study

Lucia Bortolinia\*, Lorenzo Guerrinia

aDepartment of Land, Environment, Agriculture and Forestry (TESAF), University of Padova, 35020 Legnaro (PD), Italy

\*Corresponding authors: lucia.bortolini@unipd.it

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**Abstract.** Historic parks and gardens are certainly an important part of the Italian cultural heritage and a fascinating resource for tourism. Since they are green spaces, they can also provide many other benefits, among which urban heat island (UHI) mitigation, carbon sequestration and oxygen production, habitat and biodiversity enhancement, and when accessible to citizens, they offer opportunities for their recreation and physical activity. However, the benefits and the ecosystem services of historic parks and gardens are closely related to their quality standards. In fact, these green infrastructures require a lot of efforts in terms of care and maintenance and their management usually involves qualified personnel, a large number of working hours and different types of equipment and machinery.

Historic parks and gardens are often composed by areas and areoles with different geometries and uses (e.g., luxury lawns, utility lawns, parterres, groves, etc.) and the complexity and artistic and naturalistic value of these cultural assets require the highest level of professionalism and expertise, with maintenance work that must scrupulously respect the garden's original layout. In addition, in areas with similar uses, differences in fruition as well as in visibility by visitors could lead to large differences in the intensity of maintenance required.

It is precisely the number and complexity of the tasks and the high-quality standards required that lead to high working hours and rising costs. Thus, the organisation of areas according to similarities in terms of operations and equipment could improve productivity in the required tasks with a reduction of costs and an improvement of the use of these assets.

The Miramare Park, which has a total area of 220,000 m2 and was designed in the mid-19th century, is an example of an artificial mixed planting of forest species, trees and shrubs, with large areas of lawn, combining a more typically romantic English style with areas of Italian garden near the castle. At present, it is a public park much frequented by tourists and locals, especially in the areas close to the castle, while other parts are almost unused or hardly accessible.

In this work the different areas of the park were firstly identified. Then, the maintenance requirements of each area were assessed and, finally, a zoning process was carried out by grouping areas according to similarities in management needs, considering both softscape and hardscape requirements. This preparatory work will make it possible to verify and quantify the presumed benefits of the proposed organisational approach and provide a good basis for future management improvements.