



Exploring visitors' perceptions of silvicultural treatments to increase the destination attractiveness of peri-urban forests: A case study in Tuscany Region (Italy)



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ABSTRACT

Peri-urban forests are characterized by multiple-use and various kinds of recreation activities. Public forest services have to take into account ecological, economic and social issues to provide a sustainable management of peri-urban forests, able to improve their attractiveness. Understanding visitors' demands and perceptions on peri-urban forests is a key element to support decision-makers and ensure proper management of these forests. This study is aimed at investigating visitors' perceptions and preferences regarding the characteristics of the peri-urban forests and the role of silvicultural treatments. The investigation was implemented in the Monte Morello peri-urban forest located near the metropolitan area of Florence (Italy). The forest is a dominant black pine and Calabrian pine plantation, established in the sixties for protection purpose but largely abandoned. Recently, silvicultural treatments have been applied to restore the ecological stability and enhance the resistance and resilience of forest. An innovative selective thinning was applied to compare its effects (economical, ecological and social) with the traditional thinning and with unmanaged areas. Visitors' perceptions and preferences were collected through the administration of a face-to-face interview to 201 respondents. The survey investigated three aspects: recreational use of peri-urban forests; benefits of peri-urban forest vegetation; preferences towards the characteristics of the peri-urban forest. The visitors assessed from the aesthetic point of view three images of the Monte Morello forest after different silvicultural treatments (traditional thinning, selective thinning and unmanaged forest). The results show that the preferred type of peri-urban forest is a mixed forest of coniferous and deciduous with a random arrangement of trees in space. The tourist facilities (i.e. waste baskets, picnicking and sport areas) are perceived in a positive way by visitors. With regard to the forest management alternatives, the results show that the visitors prefer the managed forest through a selective thinning.

1. Introduction

In last decades, the role of urban and peri-urban forests has changed regarding the recreational and environmental aspects due to the urbanization and globalization phenomena that occurred in many parts of the world (Blazevska et al., 2012; Pastorella et al., 2017). The world's population is quickly becoming urbanized in the last century: in the '50 of twentieth century less than 30% of the world's population lived in cities, in the 2000s this percentage rose to 47% and it is expected to grow to 60% by the year 2025 (Sanesi and Chiarello, 2006). The globalization phenomenon has reduced the distance – physical and virtual – between world's people and, consequently, it has partially standardized tastes, preferences and habits of the urbanized people (Sheppard, 2015). Particularly, since the 1960s the relevance of

instrumental values (or extrinsic values) – concerning the satisfaction of human needs (i.e., protection and food) – decreased, while in the eyes of the people the intrinsic values related to the health and the integrity of natural ecosystems have grown in importance (Inglehart, 1977). In this context, the majority of people of post-modern society considers more important the environmental, social and cultural values of forests (e.g., recreational activities, landscape aesthetic, habitat conservation, climate change mitigation, and protection against natural hazards) than the economic values (e.g., timber, biomass for energy, food and fodder) (Bengston, 1994; Paletto et al., 2012). With particular reference to countries with advanced economy, urbanized people perceive the rural spaces, the urban and the peri-urban forests as resources capable of providing clear air, shade and protection for wildlife, leisure facilities, recreational and sports opportunities (Tuffery, 2014; Andrada

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II et al., 2015).

There are differences in recreational use between urban and peri-urban forests: urban forests are more intensively used for day-use oriented activities (i.e., jogging, dog walking) and characterized by a higher use on workdays. Also in the ambit of urban forests the level of forest use, the users composition, and the temporal distribution of various activities is influenced by the degree of urbanity in terms of number and closeness of settlements, business areas, schools and so on (Arnberger, 2006). Consequently, both urban and peri-urban forests can perceive different kinds of recreation use (Van Herzele et al., 2005).

Pointing the attention on peri-urban forests, from the terminological point of view, these forests can be defined as forest stands with amenity values situated near urban areas (Blazevska et al., 2012).

Currently, peri-urban forests have a high value due to the recreational demand by people who live in towns and big cities (Zhu and Zhang, 2008; Andrada II and Deng, 2010). Consequently, these forests play an important multifunctional role providing many benefits to society such as pleasant landscape, pollution control, climate change mitigation, physical and psychological benefits, peace, relax and quiet and potential recreation opportunities (Robinette and Gary, 1972; Andrada II et al., 2015). Tyrväinen (1999) classified the benefits provided by peri-urban forests into the following main categories: social benefits (recreational opportunities, cultural and historical values of green areas); aesthetic and architectural benefits (landscape changes through different colors, textures, forms and densities of vegetation); climatic and physical benefits (cooling, wind control, temperature and humid control); ecological benefits (biotopes for flora and fauna); and economic benefits (timber, fuelwood, berries, honey and mushrooms). At the same time, these forests are affected by multiple anthropogenic pressures including soil compaction, housing fragmentation and infrastructure development (Tzoulas et al., 2007; Blood et al., 2016). These pressures often lead an alteration of the structure and composition of peri-urban forests due to the introduction of alien species, ecological disturbance and development of tourism infrastructures and facilities.

The recent increase social demand for aesthetic and recreational use of peri-urban forest resources gave a positive impetus to the

development of studies and researches on people's (residents and visitors) preferences and perception toward these forests. In the European literature, many studies have investigated the individual preferences for the aesthetic aspects of forests related to the forest management, such as tree species composition, horizontal and vertical stand structure and deadwood distribution (Tahvanainen et al., 2001; Tyrväinen et al., 2005; Edwards et al., 2012; Paletto et al., 2013; Jankovska et al., 2014; Pastorella et al., 2016b). Tahvanainen et al. (2001) in a recreation area near the city of Turku (Finland) analyzed the effects of different forest management activities on the scenic beauty and recreational values of the forest. Subsequently, Tyrväinen et al. (2005) highlighted that the residents' use of green spaces (urban and peri-urban forests) appears to be motivated by the need for psychological health with relevant social implications. Recently, Paletto et al. (2013) investigated residents' preferences for forest management strategies and stand characteristics in the peri-urban forest of the Trento municipality (North Italy), while Pastorella et al. (2016b) highlighted visitors' preferences for forest stand characteristics in the peri-urban forest of Sarajevo city in Bosnia-Herzegovina. Blazevska et al. (2012) analyzed visitors' perceptions and preferences towards the urban forests of the Aerodrom municipality (Macedonia). In addition, Jankovska et al. (2014) evaluated the impact of different management activities on the landscape attributes in order to identify the preferred landscape models for recreational use according to local residents (Riga urban forest) in Latvia. The results of these studies show that people consider urban and peri-urban forests as a peaceful and quiet place for relaxation, jogging, walks and aesthetic contemplation. The natural features of urban and peri-urban forests – e.g., groups of trees, hedgerows, water bodies – are highly preferred by people to artificial features (e.g., benches, fences, picnics and refreshment areas). From the forest management point of view, people prefer urban and peri-urban forests regularly managed, characterized by higher tree species diversity, higher color variability (mix between coniferous and deciduous), natural growth, and without obstacles to human activities (e.g., deadwood, shrub layer). Despite the above mentioned studies, there is still a paucity of information on the relationship between silvicultural treatments and people's aesthetic



Fig. 1. Location of the study area (Monte Morello peri-urban forest) in Tuscany Region (Italy).

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