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NATURE-BASED RECREATION IN PERI-URBAN AND SEMI-NATURAL FORESTS: THE VISITORS' PERSPECTIVE IN TWO CASE STUDIES IN ITALY

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Abstract: *The nature-based recreation is one of the most important ecosystem services offered by forests, providing benefits to local economy, human health and well-being, reducing depression and mental illnesses risk and increasing social interactions. The aim of the present study is to assess the importance of man-made and natural features to influence the attractiveness of two forest destinations in Central Italy: a peri-urban forest closed to a metropolitan area (Monte Morello forest) and a semi-natural forest over 50 km away from an urban area (Pratomagno forest).To assess visitors' preferences towards man-made and natural features, the study was organized in three steps: development and pre-testing of a semi-structured questionnaire; identification and administration of the questionnaire to the sample of visitors (approximately 200 in each study area); data processing and comparison between the two study areas. The stand features investigated in the on-site survey were: tree species composition and stand structure, visual-aesthetic characteristics of forest after different silvicultural treatments, and presence of recreational facilities. The results show that the forest destination with the highest attractiveness is an uneven-aged mixed forests regularly managed with silvicultural treatments. Conversely, pure conifer or broadleaved forests have a low destination attractiveness as-well-as even-aged forests characterized by a low height and diameter differentiation of trees. In accordance with visitors' opinions the recreational facilities have a high importance to increase the destination attractiveness of the peri-urban forests, while in natural forests these man-made features are not perceived as important by visitors.*

Key words: *forest recreation; visitors' preferences and perception; silvicultural treatments; questionnaire survey; Tuscany region (Italy).*

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1. Introduction

In the last decades, the nature-based recreation has taken on growing importance from the socio-economic point of view due to its capacity to facilitate social interactions, to create green jobs opportunities, to improve the local economy, and to promote social cohesion [6, 11]. Nature-based recreation is defined as outdoor activities in natural settings or otherwise involving in some direct way elements of nature such as soil, vegetation, wildlife, water bodies [5]. In nature-based recreation, forest ecosystems play a key role providing attractive sceneries for several outdoor activities such as hiking, mountain biking, fishing, hunting, bird watching, picnicking, non-wood forest products collecting [13]. As emphasized by some authors, the attractive sceneries for outdoor activities provided by forests can be quantified in terms of destination attractiveness [8, 16].

The attractiveness of a destination is the perceived ability of the destination to deliver individual benefits [22] and it is influenced by two main features of the destination [19, 33]: innate or natural features (e.g., natural resources, climate, ecology, hydrology etc.) and man-made features (e.g. accommodations, facilities for sport and recreational activities etc.). With special regard to forest destination, forest management practices can influence the destination attractiveness by intervening on stand characteristics such as [17, 29]: forest system (coppice vs. high forest), horizontal and vertical stand structure (even-aged vs. uneven-aged stand), tree distribution in the space (random, regular and cluster tree distribution), tree species composition (pure vs. mixed forest stand), and stand density (open vs. closed forest). Forest managers can influence also the man-made features improving path and road network, creating recreational facilities (picnic areas, bird watching stations) and sports, educational, or historical-cultural paths [20].

In the international literature, the attractiveness of a destination can be assessed by four main approaches [30]: geographical approach, economic approach, presentation approach, and perceptive approach. In the geographical approach, the attractiveness of the destination is determined by the number, importance, and spatial placement of individual elements such as landscape aesthetics, climate, water bodies, flora, fauna, and cultural heritage. The destination attractiveness in the economic approach is estimated considering as explanatory variables the number of visitors and the number of arrivals, length of stay (in days and hours), costs incurred by visitors, employments in tourism sector. In the presentation approach, the attractiveness is strictly related to marketing communication strategies and the way a site is presented to the potential visitors. In the perceptive approach, the attractiveness of a destination is related to the individuals' perception of the destination capability to meet their needs.

In this latter approach, the visitors' opinions, preferences, and perceptions are the starting point for the definition of management strategies aimed at improving the destination attractiveness [9]. Other authors classified the approaches for improving the destination attractiveness in two groups [1, 2]: supply

and demand approaches. The supply approach focuses on the physical (man-made and natural) features of the destination [21], while the demand approach considers the psychology of visitors and the perceived ability of destinations to satisfy their individual needs [10]. In this way, forest management practices have a direct influence on physical features, while the marketing communication and awareness strategies can generate a psychological effect on visitors increasing the site attractiveness [28].

Starting from these considerations, the aim of the present study is to assess the importance of man-made and natural features to influence the attractiveness of two different forest destinations in Central Italy. The attractiveness of the two selected destinations – a peri-urban forest closed to a metropolitan area and a semi-natural forest over 50 km away from an urban area – was assessed using the perceptive approach. The study was conducted within the framework of the LIFE SelPiBio project aimed to develop innovative silvicultural interventions in black pine forests for increasing the provision of ecosystem services, and of the LIFE FoResMit project aimed to improve the multifunctional role of the peri-urban forests with special regard to climate change mitigation. The innovative aspect of this study is to compare the visitors' preferences towards a peri-urban forest and a semi-natural forest in terms of destination attractiveness. The research hypothesis is that visitors have a different perception towards the forests in proximity of urban areas compared to those far from urban areas.

2. Material andMethods

2.1. Study Areas

The research was developed in two study areas located in Tuscany region, in Central Italy. The two areas have been selected considering the proximity of the forest resource to the urban areas. The first study area was identified less than 15 km from a metropolitan area (Florence city, 382.258 inhabitants in the 2017 census), while the second one was identified at more than 50 km from an urban area (Arezzo city, 99.469 inhabitants in the 2017 census). According to the definition provided by Blazevska et al. [4], peri-urban forests are characterized by a low distance from urban areas and a high recreational attendance (e.g. jogging, hiking, dog walking, relaxing, picnicking). Therefore, the first study area selected in this research can be considered a peri-urban forest, while the second one cannot be considered as such.

The first study area is the Monte Morello peri-urban forest (43°51' N; 11°14' E), located close to the urban area of Florence city. The Monte Morello peri-urban forest is a reforestation realized from the first of 1909 until 1980 for protection purpose, on a total area of 1,035 ha [7]. The main tree species used in the reforestation activities are black pine (*Pinus nigra* J.F. Arnold), Calabrian pine (*Pinus brutia* Ten. subsp. *brutia*), cypress (*Cupressus* spp.), flowering ash (*Fraxinus ornus* L.), Turkey oak (*Quercus cerris* L.) and Downey oak (*Quercus pubescens* L.). The altitude of the area is between 55 m and 934 m above sea level (a.s.l.), while the climate is characterized by precipitations concentrated in the period from autumn to early spring and a dry

summer in which July is the driest month, while October and November are the rainiest ones. During the last decades (from the early 80s) the total annual rainfall is 1,003 mm and the average annual temperature is 13.9°C. The Monte Morello peri-urban is an important recreational destination with 18,475 visitors per year mainly coming from the province of Florence [25].

The second study area is the Pratomagno forest (43°39′ N 11°39′ E) located in the North-West of the Arezzo province. The Pratomagno was affected by reforestation activities started in 1954 and ended in the 1980s with the aim to increase water and soil erosion protection, and to avoid landslides and other natural hazards. The main tree species used in the reforestation activities were Calabrian pine (*Pinus brutia* Ten. subsp. *brutia*), Austrian black pine (*Pinus nigra* J.F. Arnold), and some broadleaved species such as Turkey oak (*Quercus cerris* L.), European beech (*Fagus sylvatica* L.), Downey oak (*Quercus pubescens* L.) and flowering ash (*Fraxinus ornus* L.). The climate is characterized by an average annual temperature of 10.5°C (maximum 19°C in July and minimum of 1.5°C in January), while the average rainfall is 997 mm with a maximum peak in autumn and a minimum precipitation in June. From the recreational point of view, the Pratomagno forest is a quite important recreational destination with an average number of visitors per year of 5,140 [24].

2.2. Research Structure

The study was organized as an on-site survey and was structured in three steps: (1) development and pre-testing of a semi-structured questionnaire; (2) identification and administration of the questionnaire to the sample of visitors; (3) data processing and comparison of the results between the two study areas. The aim of the questionnaire was to assess the influence of stand features on destination attractiveness.

In the first step, a preliminary version of the questionnaire was developed by researchers and local experts involved in the projects' activities. The preliminary version of the questionnaire was pre-tested with five visitors of the Pratomagno forest and four visitors of the Monte Morello peri-urban forest. The pre-test stage was performed with the aim of identifying critical questions and to estimate time for completing the questionnaire. After the pre-test stage, two questions have been simplified and one question has been deleted in accordance with visitors' comments and suggestions.

The final version of the questionnaire was formed by closed-ended and open-ended questions divided in three thematic sections. The first section focused on the recreational attendance of the destination such as: number of visits to the forest site in the last 12 months; preferred visiting days (weekend or both weekend and working days); number of persons and time of current visit (all day, a few hours, less than an hour); vehicle used and kilometers traveled in current visit; costs incurred for the visit (meals, accommodation, other expenses); visiting group (alone, with family members, with friends, in organized group); and reasons for visiting.

In the second section, the respondents assigned their preferences for the natural features of the stand such as tree species composition (distinguishing between

mixed forests, pure broadleaved forests and pure conifer forests)and stand structure (distinguishing between uneven-aged forests with random distribution of the trees in the space and even-aged forests with regular distribution of the trees in the space). For these two natural features, the respondents gave a single preference. In addition, respondents were asked to assign preferences for the presence of the following man-made features: picnicking areas, sports paths, benches, trail marking, waste baskets. For these man-made features, a multiple preference answer was present in the questionnaire. In the last question of this section, the respondents assigned their visual-aesthetic preferences for some photos representing the forest landscape of Monte Morello and Pratomagno after different silvicultural treatments (selective thinning and thinning from below). In the international literature, there are two main approaches to evaluate the sense of landscape: on-site approaches and off-site approaches. In the on-site approaches the sense of landscape is evoked by a real experience in the forest, while in the off-site approaches the sense of landscape is evoked by a representative sample scene [12]. Regarding the off-site approaches, the most common methods are photo elicitation (presentation of the landscape in a two-dimensional photo) and virtual reality (presentation of the landscape in a virtual three-dimensional scene) [3]. Sevenant and Antrop [31] highlighted that the photo elicitation method cannot provide complete visual information compared to the real situation. To overcome these limitations, in the present study a mixed on-site and off-site approach was used: the visitors were interviewed in the forest site, but the three forest management situations were shown using the photo elicitation method.

The three forest management situations investigated in this study can be described as follows:

1. Without silvicultural treatments: current situation in both study areas characterized by no silvicultural interventions, the standing dead trees and the lying deadwood are not removed;
2. Selective thinning: in this situation the choice of the trees to be cut is based on a positive selection (thinned 30-40% of basal area). During cutting all crown-volume competitors trees are harvested, standing dead trees and lying deadwood of first decay classes are removed;
3. Thinning from below: in this situation the choice of trees is based on a negative selection (thinned from below 15-20% of basal area). During cutting only small and leaned trees and standing dead trees are harvested, while the lying deadwood is not removed during the silvicultural treatments.

During the interview, the visitors compared the three photos in pairs (pair wise comparison), according to the following scheme:

Photo A	5	3	1	1/3	1/5	Photo B

The preferred image by the visitors was identified with the calculation of the priority value of each image followed the method proposed by Paletto et al. [25].

The third section of questionnaire considers socio-demographic characteristics of respondents such as: gender; age (distinguishing among four

classes: less than 25 years old; 25-44 years old, 45-64 years old and more than 64 years old); level of education (elementary school degree; high school degree; university and post-university degree); occupation (employed in the public and private sector; housewife; student; pensioner; unemployed); and place of origin (distinguishing between administrative province where the study area is located; other provinces of Tuscany region; other Italian regions, and foreign countries).

In the second step, the visitors have been systematically selected in two sampling points in each study area. The criteria used to select the sampling points were the accessibility and the presence of landscape observation points. The visitors to be interviewed were selected one for every two that arrived in the two sampling points. In both study areas, the questionnaire was administered face-to-face to a sample of visitors in the spring-summer period. The questionnaire was administered to the visitors by a lead interviewer and an assistant, both in working days and weekend to include in the sample different types of visitors (single visitor, couples, families, groups of friends).

In the last step, the data were processed to produce the main descriptive statistics: mean, median and standard deviation for the data collected using the Likert-scale format, percentage of frequency distribution (%) for other questions. The results were presented by case study and considering two of the socio-demographic characteristics of respondents: gender and age. Finally, the data of the two study areas were statistically compared using the Chi-square (χ^2) test (α=0.05).

3. Results

3.1. Socio-Demographic Characteristics of Respondents

The socio-demographic characteristics of respondents of the two study areas are shown in Table 1.

In the Monte Morello area, the response rate was 75.0%: 201 visitors completed the questionnaire, while 68 refused to fill out the questionnaire. The sample of respondents is composed of 59.7% males and 40.3% females, while the age distribution of the respondents shows that around72 % is between 25 and 64 years old. Regarding the level of education, the distribution of the sample of respondents' evidences that most of respondents (around 70%) has a high school or University degree. Concerning the occupation, the sample of respondents is mainly composed by people employed in private or public sector (47.3% of total respondents), followed by retirees (26.4%), unemployed people (6.5%), students (6.0%), and housewives (4.5%). The remaining 9.3% is distributed in other jobs not mentioned in the proposed list.

The target of visitors of Monte Morello forest is mainly represented by local visitors, in fact 68.0% comes from Florence province and 26.0% from other provinces of Tuscany Region.

In the Pratomagno area, the response rate was 22.2% (200 questionnaires collected and processed), while the non-response rate ranges between a maximum of 85.0% on holidays and Sunday and a minimum of 70.0% on Saturday and working days. Most respondents in our sample are males (62.0%), while the remaining 38.0% are females.

Table 1

Socio-demographic characteristics of respondents in the two study areas

Socio-demographic characteristics/Study area	Monte Morello (*n*=201)	Pratomagno (*n*=200)
Gender		
Male	59.7%	62.0%
Female	40.3%	38.0%
Age		
Less than 25 years old	4.5%	20.9%
25-44 years old	30.3%	33.2%
45-64 years old	41.8%	32.8%
More than 64 years old	23.4%	13.1%
Level of education		
Elementary and technical school degree	26.9%	19.1%
High school degree	40.8%	44.2%
University and post-university degree	32.4%	36.7%
Occupation		
Employed	47.3%	52.0%
Housewife	4.5%	4.5%
Students	6.0%	19.0%
Retirees	26.4%	14.0%
Unemployed	6.5%	10.5%
Other	9.3%	0.0%
Place of residence		
Administrative province of the study area	68.0%	88.5%
Other provinces of the Tuscany regions	26.0%	10.5%
Other Italian regions	4.0%	1.0%
Foreign	1.0%	0.0%

Also in Pratomagno the distribution of respondents by age shows that most respondents (66%) are between 25 and 64 years old. Regarding the level of education, the results show that most respondents have a high school degree or University degree (around 80% of total respondents). The distribution of respondents by occupation show that 52.0% of respondents is employed in public or private sector, 4.5% are housewife, 19.0% are students, 14.0% are retirees, while the remaining 10.5% are unemployed people.

Finally, the visitors of Pratomagno forest mainly come from the same province (Arezzo province) where the forest is located (88.5%), while 10.5% of visitors come from the Firenze province and no visitor comes from foreign countries. These results demonstrate that most visitors are local persons (hikers, pickers), while the number of tourists is quite low.

3.2. Preferences for the Natural Features

The results show that the visitors of Monte Morello area prefer mixed forests

(69.7% of total respondents), followed by broadleaved forests (20.9%) and conifer forests (9.5%). Likewise, most of the visitors of Pratomagno area prefer mixed forests (67.8%), while pure broadleaved forests (16.6%) and pure conifer forests (15.6%) are less appreciated. The Chi-square (χ^2) test (α=0.05) shows no statistically significant differences between the two study areas (p=0.133).

Observing the data by socio-demographic characteristics, the results show in Monte Morello area a higher preference of females for mixed forests compared to males (77.8% vs. 64.2%); conversely, males have a higher preference respect to females for pure broadleaved forests (22.5% vs. 18.5%) and pure conifer forests (13.3% vs. 3.7%). Similarly, in Pratomagno area females show a higher preference for mixed forests (70.7% vs. 65.9%) and for pure broadleaved forests (18.3% vs. 16.3%) compared males, while males prefer pure conifer forests compared females (17.9% vs. 12.0%). In Monte Morello area, the results by age show that the preference for pure conifer forests increases in the older age classes (0% of the respondents with less than 25 years, 4.9% between 26 and 44 years, 9.5% between 45 and 64 years, 17.0% with more than 64 years). Conversely, this trend is not observed for the responses of visitors to Pratomagno area.

Regarding the stand structure, the results show that the visitors of Monte Morello prefer uneven-aged forests (88.7% of total respondents) as-well-as the visitors of Pratomagno (77.3%). The Chi-square (χ^2) test (α=0.05) shows a statistically significant differences between the two study areas (p=0.017). Observing the data by gender, in Pratomagno females express a clearer preference for uneven-aged forests compared to males (80.3% vs. 75.0%), while in Monte Morello no differences are found between females and males. Analyzing the data by age, a relationship between age and preferred structure is highlighted for the visitors of Monte Morello. In fact, uneven-aged forests are preferred by 75.0% of visitors with less than 25 years old; 82.4% of visitors aged 25-44 years; 90.6% of visitors aged 45-64; and 96.6% with more than 64 years. Therefore, it can be said that uneven-aged forests are more appreciated by older people, while even-aged forests by younger ones.

The results concerning the impacts of silvicultural treatments on visual-aesthetic preferences (Table 2) show that for the visitors of Monte Morello peri-urban forest the preferred situation is Photo 3 (priority score of 0.5034), followed by Photo 2 (0.2873) and Photo 1 (0.2093). Similarly, the visitors of Pratomagno forest assigned the same order of priority but with closer scores: Photo 3 (priority score of 0.4014), followed by Photo 2 (0.3358) and Photo 1 (0.2628).These results show that in both study area visitors prefer managed forests (Photo 2 and 3), while unmanaged are evaluated negatively from the visual-aesthetic point of view by the respondents.

Regarding the gender, for both study areas females assign higher value to managed forests (Photo 1 and 2) compared to males; conversely, males assign higher value to unmanaged forests (Photo 3) compared to females.

Regarding the age, in Monte Morello the results show a trend of decrease of the Photo 1 priority score (unmanaged forests) when the age of respondents

increases, while the priority score of the Photo 2 and 3 (managed forests) increases when the age of respondents increases (Figure 1). In Pratomagno there is no trend in the association between photos preferences and age of respondents.

Table 2

Priority scores assigned by the visitors to three forest management situations shown using photos

Photo/Study area	Monte Morello (*n*=201)	Pratomagno (*n*=200)
Photo 1 - Without silvicultural treatments	0.2093	0.2628
Photo 2 - Thinning from below	0.2873	0.3358
Photo 3 - Selective thinning	0.5034	0.4014

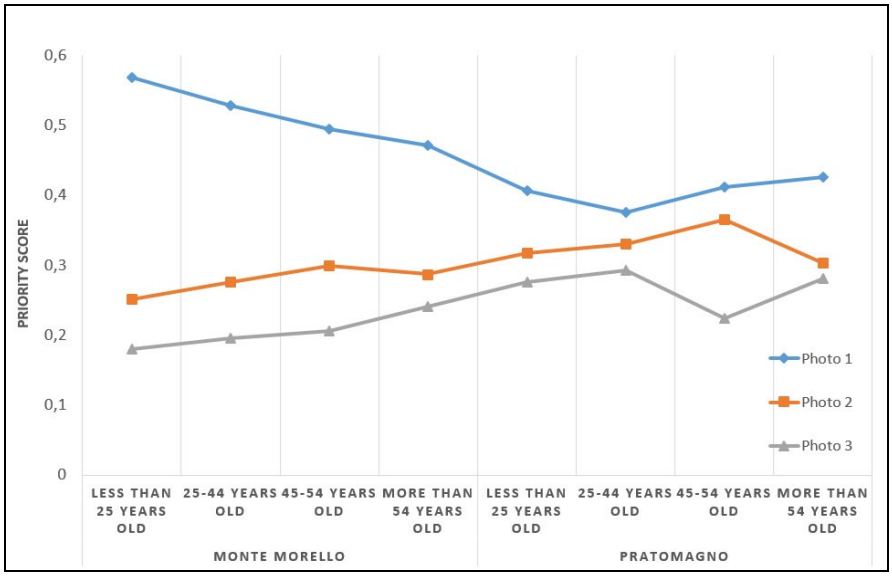

Fig. 1. *Priority scores for the three forest management situations in the two study areas by age*

Summarizing the results, the forest destination with the highest attractiveness is an uneven-aged mixed forest regularly managed. Conversely, pure conifer or broadleaved forests have a low destination attractiveness as-well-as even-aged forests characterized by a low height and diameter differentiation of trees. Finally, also the unmanaged degraded forests are perceived negatively by the visitors.

3.3. Preferences for the Man-Made Features

The results show that for the visitors of Monte Morello peri-urban forest all man-made features have a high importance to increase the destination attractiveness. Figure 2 shows that waste baskets (58.2% of total respondents) and picnicking areas (54.7%) are considered the two most important recreational facilities, while trail

marking is considered the least important (44.8%). Conversely, for the visitors of Pratomagno forest only trail marking is considered quite important (54.5%), while the other four recreational facilities are considered important by less than 40% of total respondents. The Chi-square (χ^2) test (α=0.05) shows statistically significant differences between the two study areas (p=0.017).These differences show that visitors perceive recreational facilities more positively in urban and peri-urban forests, while in natural forests most visitors perceive in a positive way only the trail marking (Figure 2).

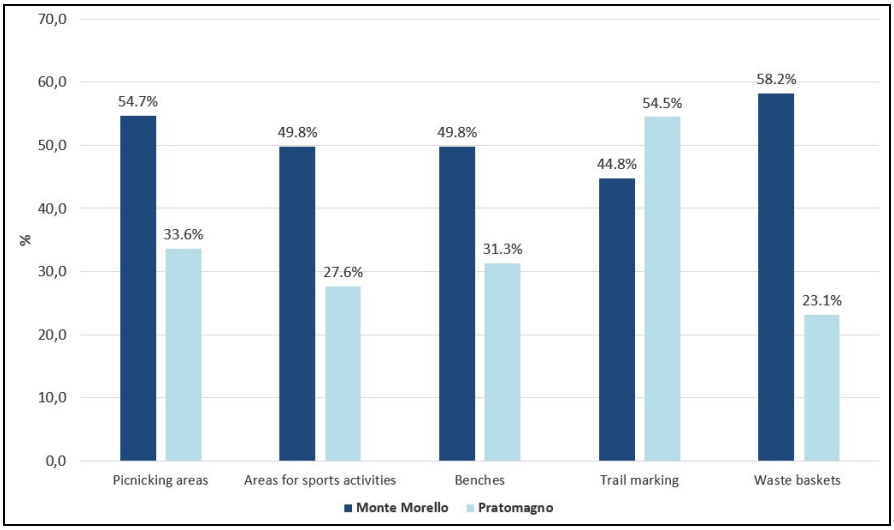

Fig. 2. *Visitors' preferences for man-made features in the two study areas*

Observing the data by gender (Table 3), in the Pratomagno the results show that males considered more important than females the presence of area for sports activities (23.4% vs. 11.8%), while females consider the other four recreational facilities more important than males: picnicking areas (23.7% vs. 22.6%), benches (25.0% vs. 18.5%), trail marking (38.2% vs. 35.5%), waste baskets (19.7% vs. 12.9%).Similarly, in Monte Morello, males assigned a higher preference than females to picnicking area (58.3% vs. 49.4%), sports areas (53.3% vs. 44.4%), while females assigned a higher preference to benches (50.6% vs. 49.2%), trail marking (45.7% vs. 44.2%), and waste baskets (60.5% vs. 56.7%).

The results by age show that in both study areas young visitors (less than 25 years old) assigned a lower level of importance to all recreational facilities compared to other visitors. Distinguishing between visitors with less than 25 years old and all other age classes, the results are distributed as follows,: picnicking areas (Monte Morello 33.3% vs. 55.7%; Pratomagno 19.0% vs. 24.1%), areas for sports activities (Monte Morello 44.4% vs. 50.0%; Pratomagno 26.2% vs. 17.1%), benches (Monte Morello 22.2% vs. 51.0%; Pratomagno 14.3% vs. 22.8%), trail marking (Monte Morello 44.4% vs. 44.8%; Pratomagno 28.6% vs. 38.6%), waste baskets (Monte Morello 55.6% vs. 58.3%; Pratomagno 7.1% vs. 17.7%).

Table 3

Visitors' preferences for man-made features in the two study areas by gender and age

Socio-demographic characteristics/Facilities	Picnicking areas	Sports areas	Benches	Trail marking	Waste baskets
Monte Morello (*n*=201)					
Gender					
Male	58.3%	53.3%	49.2%	44.2%	56.7%
Female	49.4%	44.4%	50.6%	45.7%	60.5%
Age					
Less than 25 years old	33.3%	44.4%	22.2%	44.4%	55.6%
25-44 years old	59.0%	55.7%	49.2%	47.5%	55.7%
45-64 years old	57.1%	48.8%	54.8%	42.9%	61.9%
More than 64years old	48.9%	44.7%	46.8%	44.7%	55.3%
Pratomagno (*n*=200)					
Gender					
Male	22.6%	23.4%	18.5%	35.5%	12.9%
Female	23.7%	11.8%	25.0%	38.2%	19.7%
Age					
Less than 25 years old	19.0%	26.2%	14.3%	28.6%	7.1%
25-44 years old	24.2%	18.2%	15.2%	36.4%	16.7%
45-64 years old	25.8%	21.2%	27.3%	45.5%	19.7%
More than 64 years old	19.2%	3.8%	30.8%	26.9%	15.4%

4. Discussion and Conclusions

The results provided by the present study show that the destination attractiveness of a forest is deeply influenced both by the natural features of the stand and by man-made features. However, visitors' requests and expectations are strictly related to the forest destination with special regard to the proximity to the urban areas and to the intensity of recreational use. Visitors' requests for urban and peri-urban forests – close to urban areas and intensively used for recreational activities – are a natural environment, but with all possible "comforts" such as easy trail marking, equipped picnic areas, other recreational facilities. The preferences of Monte Morello visitors confirm that all recreational facilities (picnicking and sports areas, benches, trail marking, waste baskets) are appreciated to improve the usability of the site. Conversely, in semi-natural forests away from urban areas – such as Pratomagno forest –recreational facilities are not appreciated by visitors who are looking for greater landscape naturalness. Regarding the innate features, in both study areas the preferred situation is an uneven-aged mixed forest regularly managed. Instead, the planted pure forests – such as the two study areas of the present research – were characterized by medium-low recreational attractiveness.

In the international literature, some studies have shown the visitors'

preferences towards mixed forests compared to pure broadleaved and conifer forests [14, 15, 27]. These studies confirmed that the tree species composition is a very important feature to increase the destination attractiveness. In particular, Grilli et al. [14] shown that the mixed forests are preferred by visitors of the Polish Carpathians, while Paletto et al. [23] highlighted that the citizens of Trento municipality prefer mixed forests (66% of 314 respondents), followed by conifer forests (28%) and broadleaved forests (6%). Besides, those authors pointed out that some recreational facilities – e.g., unspoiled nature, paths, parking areas, food vendors – are appreciated by visitors. Similarly, Jankovska et al. [18] highlighted that the visitors of the Riga peri-urban forest perceived the presence of tourist facilities – e.g., waste baskets, picnicking and sport areas – in a positive way. Pastorella et al. [26] show that visitors of a high mountain forests in Italian Alps have a strong preference for mixed forests with a structure characterized by trees with different size (horizontal stand structure) and randomly distributed in the space. Tyrväinen et al. [32] highlighted that the visitors of the urban forest of Helsinki city (Finland) assigned a preference to mixed Scots pine and Norway spruce stands, but conversely mixed stands of deciduous trees are disliked. Besides, those authors emphasized that in accordance with the visitors' opinions the three most important forest management interventions to increase the value of forest landscape are: thinning, management of understory and bush layer, and removal of dead snags.

The results of present study confirmed that in urban and peri-urban forests, like Monte Morello of the present research, a thinning of medium-high intensity has a positive effect from both a visual-aesthetic point of view and accessibility to the forest destination. In addition, in these forests under story and bush layer as-well-as lying deadwood and dead snags must be removed during silvicultural interventions in order to increase the safety and accessibility of the destination. The information provided by this study can be considered a starting point to support forest managers to increase the attractiveness of forest destinations. The future steps of the project will be to investigate further man-made and innate features of different forest stands.

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