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Fanning the Flames of Awareness: Strengthening Italian Society's Knowledge on Wildfires †

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Abstract: Since the late 20th century, wildfires have increasingly disrupted ecosystems, particularly in Mediterranean-climate countries like Italy. This trend is linked to agroforestry and the abandonment of grazing activities, which is worsened by climate change. This study examines the knowledge within Italian society, using data from a survey conducted as part of the European FIRE-RES project, with 152 answers, mainly from northern Italy. The research explores traditional practices, identifies knowledge gaps, and proposes a program to enhance community resilience and to mitigate the impact of wildfires through preparedness and adaptation measures. Results show that, despite a strong cultural connection to the use of fire in Italy, there is a significant gap in public knowledge and readiness to address wildfire incidents among the population. This shows the need to develop educational programs to improve community awareness and adaptive measures to mitigate the impact of wildfires.

Keywords: wildfire risk; education and awareness; community preparedness; survey

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1. Introduction

In recent years, the Mediterranean region of Europe has faced significant changes in fire regimes, leading to more frequent, severe, and extensive wildfires [1,2]. These wildfires, which cause damage to forests, human lives, and properties, have become increasingly frequent, severe, and extensive. The region's unique climatic and biophysical characteristics make it particularly vulnerable to wildfires, especially during the hot and dry summer months, when vegetation becomes more fire prone [3,4]. International reports from the Intergovernmental Panel on Climate Change (IPCC) [3] and the European Forest Fire Information System (EFFIS) [5] indicate that rising global temperatures and prolonged summer droughts have exacerbated this hazardous situation. In this scenario, Italy, as one of the Mediterranean countries, is particularly sensitive to these events.

The shift in fire patterns is driven not only by climatic factors, but also by socioeconomic dynamics that have evolved over recent decades in the Mediterranean Basin [3–5]. A significant factor is the migration of the Italian population from rural to urban areas, resulting in major land use changes. Abandoned agricultural and grazing lands have been replaced by shrubs and forest, creating landscapes with continuous fuel sources. This fuel

continuity, characterized by tall grasses and scrubland, has contributed to the severity of recent wildfire seasons in Italy [6–8].

2. Materials and Methods

To understand public knowledge and the perceptions of wildfires in Europe, an extensive international survey was conducted as part of the FIRE-RES project. This survey was translated into Italian to encourage participation from Italian residents.

Developed using Google Forms, the survey was open from November 2023 to the end of March 2024. It featured a variety of question formats, including multiple-choice questions, tick-box grids, and checkboxes, with an estimated completion time of nine minutes. The survey comprised 24 questions divided into five sections: respondent characteristics, use of fire in daily life, proximity to wildfires, knowledge about wildfires, and the fire cycle. The snowball sampling methodology [9] was employed to disseminate the survey, through which existing contacts identified further potential participants.

The sample purpose was not intended to be representative of the Italian population, but aimed to explore the general knowledge and perceptions of the respondents to support the development of an international educational platform on wildfire-related topics.

Participants were asked to agree to the terms of the study, ensuring that their data remained anonymous in compliance with GDPR rules (EU data protection).

The answers were analyzed using frequency and descriptive statistics (measures of central tendency as means, variances, standard deviation, percentage values, frequency analyses, ANOVA, and chi-square analysis) using Excel and R.

3. Results

A total of 152 answers were collected and analyzed. The general profile of the interviewees revealed a fairly balanced gender distribution, with 57% aged between 18 and 34 years. A significant portion of the respondents (89%) were from Northern Italy. Additionally, 67% of the respondents were employed, and the majority (82%) lived in urban areas or rural–urban interfaces.

The initial results indicated some interest among the Italian population in the topic, though a significant portion (above 80%) lacked adequate knowledge on prevention, self-protection, firefighting, and post-fire restoration measures, feeling ill-prepared to face extreme events.

The survey revealed that the use of fire in cultural festivities remains deep-rooted in the Italian tradition. Events such as Epiphany bonfires, la "Ndocciata d'Agnone", New Year's Eve celebrations, and Easter and Christmas bonfires showcase the enduring connection between fire and festivity in Italy.

In daily life, fire is primarily employed for cooking (49%), personal use, such as smoking and candlelight (22%), and barbecuing (15%).

The study revealed a moderate interest regarding wildfires, with many individuals reporting seeking information over the past year (54%).

Students reported a statistically significant difference (0.000042) regarding the prevalence of slash–burn activities and other uses of rural fire in their localities compared to the other groups. Regarding the interest in fire and wildfires, the employed group showed statistically significant differences (0.000029) compared to the other three groups.

In most of the topics explored, perceptions and experiences were similar across different groups, regardless of their demographic or geographical categories.

4. Discussion

The data provided a comprehensive insight into the perceptions and behaviors of the Italian respondents towards fire use, cultural traditions, and wildfire awareness. Despite a cultural connection to fire, there is a significant gap in public knowledge and readiness concerning wildfires, which coincides with Spano et al.'s study [10]. Additionally, the regional concentration of respondents from Northern Italy may reflect regional cultural practices and awareness levels, suggesting that future studies could benefit from broader geographical representation to capture nationwide trends.

The numerous traditions of using fire in cultural festivities referred to by the respondents underscore the historical and social importance of fire. This cultural attachment to fire may influence public attitudes toward fire use and safety, suggesting the need for culturally sensitive approaches when designing educational campaigns about fire safety and wildfire prevention. Additionally, the findings indicate that fire remains an integral part of many Italians' daily routines. The reliance on fire for cooking and personal use suggests potential areas for targeted campaigns and interventions to promote fire safety behavior practices and to reduce fire-related risk practices when using fire for these activities outside.

There is a clear need for targeted educational campaigns to improve knowledge about wildfires and the fire cycle, aligning with the results of the Ivčević et al. study [11]. These campaigns should be widely disseminated and tailored to different demographic groups to maximize reach and impact. Campaigns should also take into consideration where the target audience lives, in such a way that the language and fire risk behaviors are adjusted to the public's reality [12]. Initiatives could include community-based programs and workplace training sessions to enhance accessibility and relevance.

The existing literature reinforces these findings, advocating for educational programs that cater not only to different age groups, but also to local community needs [13,14]. Addressing these gaps in future fire education materials is essential for better public preparedness and awareness [15].

5. Conclusions

This study underscores the urgent need for improved wildfire education and preparedness in Italy. Despite a strong cultural connection to the use of fire, there is a significant gap in public knowledge and readiness to address wildfire incidents, also referred to by the respondents.

Socioeconomic factors, such as rural depopulation and changes in land use, increase the vulnerability of certain regions and elderly people to wildfires. Combined with climate changes, these factors have led to more frequent and severe fire events. Additionally, the fragmentation of traditional fire-related practices and knowledge poses a challenge to effective wildfire management.

To address these issues, the next steps should include the development and implementation of educational initiatives, such as FIRE-RES' proposed Fire Education Platform. This platform will serve as a repository for best practices, resources, and data to support ongoing education and community awareness efforts.

Future research should focus on longitudinal assessments of the effectiveness of these educational interventions. Moreover, integrating traditional knowledge with modern wildfire management practices can foster a comprehensive approach to wildfire risk reduction, enhancing community resilience and preparedness.

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