Article

Disentangling the Diversity of Forest Care Initiatives: A Novel Research Framework Applied to the Italian Context

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Abstract: In the effort to advance the knowledge of and disentangle the diversity of emerging forest-based initiatives for wellbeing, we propose (1) an umbrella definition (i.e., forest care initiatives (FCIs)), (2) a custom-made repository to collect and systematize information on FCIs in Italy, and (3) discuss a categorization scheme to cluster initiatives into three main categories according to target users, substitutability of the forest ecosystem, and the specificity of the health contributions to which they are aimed. We analyzed 232 initiatives, showing a lively panorama of Italian FCIs, mainly provided by private entities and civil society. FCI developments appear to be occasions for, but are not restricted to, rural and marginal areas delivering inclusive wellbeing services to a wide target user group and business opportunities. However, due to the novelty of this area of investigation, further research is needed to account for benefits and opportunities and to increase knowledge on enabling forest environments.

Keywords: forest care initiatives; forests; sustainable rural development; wellbeing; social health

1. Introduction

As stated in the EU Biodiversity Strategy for 2030, "Nature is as important for our mental and physical wellbeing as it is for our society's ability to cope with global change, health threats and disasters. We need nature in our lives" [1]. Large, continuous natural spaces like forests and more accessible woodlands in our cities provide increased air quality, health protection, and resilience to climate changes, as well as occasions for sociobehavioral and cultural ecosystem services (CESs) and even health outcomes [2–6]. Indeed, indirect (through sensory stimulation [7–12]) and direct contact with forest ecosystems can positively impact mental [13–19], physiological [20–22], and social wellbeing [23–27]. This could mitigate the consequences of urbanization processes such as the growth of non-communicable diseases [28], the increased pressure on social, educational and health services, the disconnection with nature, and the response to the need to have space for social interaction and stress relief [29–31]. This is matched with a generalized trend toward wellness and reconnection with the natural world [32,33]. In parallel, the rural and forestry worlds are facing structural changes toward a more service-centric economy [34]. Therefore, the expansion of forest-based ecosystem services and multiple uses is evolving in harmony with the emerging social demands for wellbeing. In fact, examples of organized initiatives enabling contact with forest ecosystems for wellbeing promotion are thriving [35]. From Japan's shinrin-yoku (i.e., forest bathing) and healing forests in the Republic of Korea, these initiatives are expanding throughout Europe and adapting next to other, better-established ones, such as forest kindergartens, outdoor museums, and social forestry practices [5,16,36].

In the last few decades, European rural development policies have been gradually expanded toward improving the quality of life of rural populations and encouraging diversification of the rural economy, as well as multifunctionality [33]. The health and social sectors appear to increasingly look for alternatives to traditional treatments, therapy, and rehabilitation that also involve nature [37]. In this context, Green Care developed

differently between countries, creating links between sectors not formerly linked [38,39]. In the same vein, forest care initiatives (FCIs) are now spreading and adapting to different socioeconomic contexts, resulting in a great diversity of activities for targeted people, the professionals involved, organization models, objectives, and uses of environmental resources. Initiatives include, for example, social inclusion of marginalized groups of people, activities supporting education and pro-environmental behaviors [27,40–42] (e.g., forest schools and forest pedagogy [43]), enhancing artistic and cultural inspiration [44] (e.g., through land art and contemporary art museums in forests), spiritual forests and forest burial initiatives [45], which are growing in countries like Austria and Germany (https://www.ruheforst-deutschland.de/), initiatives enhancing the quality of social relationships, and encouraging reconnection with nature and increases in self-esteem. These FCIs have just been recently addressed by scholars [46–48], and research efforts are (1) focused on a limited range of initiatives, namely forest therapy and forest bathing, (2) mainly distinguishing initiatives according to the typologies of the health effects they provide [49], and moreover, (3) not setting clear terminology and definitions, often creating confusion about objectives and services provided by these initiatives. This hinders the possibility to account for wider wellbeing benefits, multipurpose initiatives, and a wealth of other differences between them.

Forest care initiatives are aimed at increasing people's wellbeing, not only focusing on diseases but also on people's needs, individuals' expectations, and their health and role within the community. Nevertheless, these initiatives contribute to wellbeing with different objectives, such as (1) therapeutic and rehabilitation effects for people with specific needs and health conditions [50–53], (2) preventive effects [5,54–59] and health-promoting effects [60–64], and (3) wellbeing effects, such as education, recreation, social inclusion, tourism, recreation, and spiritual, artistic, cultural inspiration, thus generating indirect health benefits in synergy with other sectors [26,29,60,61,65,66]. Such initiatives welcome the concept of people-centric care by the World Health Organization, enlarging it to non-clinical interventions and to the broad concept of wellbeing. Secondly, of course, all of the initiatives use the forest environment for its psychophysical regenerative potential and natural consequences as cognitive behavioral therapy [29,67,68]. However, various forest environments are used, from close-to-nature forests for wilderness and adventure therapy to peri-urban and urban forests [1,69], to promote active lifestyles (for examples, see [60,62]) in hospitals for clinical therapy or rehabilitation interventions [15,70]. As a third point, some initiatives are highly dependent on certain forest areas to deliver their services while others are not, and different forests can interchangeably be used as a set to deliver certain services and benefits, from conducting ad hoc studies for forest therapy base certification in Japan [71] to the selection and inventory of specific areas and trails for social prescribing [72,73] to wilderness and adventure therapy, which can be itinerant or also done in non-forest ecosystems. It is not rare to find multipurpose and holistic initiatives capturing and delivering more than one effect at time. Healing forests in the Republic of Korea (Information on Korean forest healing centers available at https://english.visitmedicalkorea.com/eng/wellnessKorea/wellnessKorea_03/wellnessKorea_03_3.jsp), for example, are places devoted to tourism, holistic wellness, and specific treatments. Different objectives entail different target users, from the wide general public to specific segments of the population or people with special needs (e.g., physical and mental disabilities, illnesses, and psychological disorders). The professionals involved, activities proposed, environmental features and partnerships would be tuned accordingly. This diversity requires an instrument to collect and standardize information and to further disentangle the differences between FCIs and understand their target users, contributions to wellbeing, and the role of the environment. The lack of univocal and clear definitions results in gaps with regard to both an umbrella term embracing them and shared ways to categorize and classify single initiatives under the umbrella. This reflects the information gaps and lack of attention within policies and gray literature including, for instance, national forest reporting initiatives.

1.1. Objectives

We argue that FCIs provide a wide range of sociobehavioral and CES benefits, are often multipurpose, serve a wide target of people, and use the forest environment in different ways. The problem faced is a generalized lack of information on the initiatives, as well as tools to collect and standardize the information about their relevant environmental, social, and economic aspects. Although the research on health effects is growing, there is a lack of discussion about these aspects. This study aims to disentangle the multifaceted concept of forest initiatives for wellbeing and gain better knowledge and understanding of ongoing initiatives in order to grasp and analyze useful information that might support their development.

The general objective will be achieved through the following specific objectives:

(1)   To develop a comprehensive definition for forest care initiatives;
(2)   To collect and systematize information through the development of an inventory of forest care initiatives in Italy;
(3)   To propose a scheme to catch the diversity and characterize the wealth of existing initiatives.

1.2. Scope and Definition

Existing literature shows how being in contact with a forest produces positive health effects. These benefits can be delivered just by making forests and woodlands accessible to people. However, purposely managed natural areas and activities can increase effectiveness, engage wider target groups, and provide development opportunities for the forest sector [36,74].

In the effort to identify the boundaries defining the scope of our research, and to be able to consider the wider contributions for people and communities, we look for initiatives that (1) are carried out in forest or woodland areas, or in a mixed ecosystem with the presence of a forest area, (2) have a manifested intention of increasing the level of wellbeing of people (i.e., the activity is organized, the aim is clearly stated and evidence or effort for improving health, social wellbeing, is provided), and (3) are organized with a provider or promoter, thus excluding spontaneous, self-leading activities in natural areas not devoted to these purposes. The initiatives must be presented by a provider offering the space or infrastructure and providing a guide or assistant.

Given these premises, we define FCIs as organized initiatives, encompassing everything from single stand-alone activities to national programs, which can be both for profit and not-for-profit, and that use (passively or actively) contact with a forest's elements and atmosphere to increase the level of wellbeing of individuals, people, and communities. The term care is borrowed from the Green Care literature, and thus here is intended not just as the act of caring, but encompasses interventions that lead to maintaining, promoting, and providing health and social rehabilitation [48]. In this sense, we intend the term care in its broadest sense, integrated with the definition of wellbeing provided by the World Health Organization. Therefore, FCIs comprise aspects of healthcare, social inclusion and rehabilitation, health prevention with clinical assistance to broaden wellness and relaxation, education ranging from pedagogy to opportunities for disaffected people, spiritual and inspirational values, employment, and livelihood.

2. Materials and Methods

Building on the above-reported definition of FCIs, we identified FCIs in Italy through desktop research on Google, combining three sets of keywords representative of (a) the environment (e.g., foresta, bosco, natura, and outdoor), (b) FCIs (e.g., forest bathing, bagno di foresta, asilo in bosco, and benessere) and (c) territorial units (Nomenclature of Territorial Units for statistics 2). This search was enriched with additional data mining via scientific and gray literature, personal contacts, and snowball sampling. The research was conducted from January 2019 to July 2020. We included those FCIs that presented clear objectives of wellbeing. Thus, simple or traditional tourism, sport, and recreational initiatives in forest areas were excluded (e.g., adventure parks in the forest were excluded because they

are generally well-established, but only included when they integrate services oriented to wellbeing or environmental education). The units of the survey were the single FCIs. There are no official databases of FCIs, so it was not possible to report precise numbers and data. In addition, existing FCIs do not share precise standards and requirements; thus, it was necessary to perform a one-by-one screening of the initiatives. Given the unprecedented situation due to the spread of COVID-19, with the adoption of social distancing measures, many initiatives were forced to close during the last period of our research. Hence, such initiatives were considered active if it was clearly stated that they were suspended due to above-mentioned reasons.

A repository was developed in order to collect and systematize information from as many cases as possible, with a quick procedure and relatively low level of information at our disposal, and organize them into a database. The structure and initial set of indicators was broadly inspired by the one developed by [75] for payments for ecosystem services. In the effort of standardized yet fair illustration of a new field, we used an inductive process based on literature review and experts' elicitation. A constant feedback loop enabled us to refine the set of dimensions so as to capture information that could be standardized and was available crosswise to the diverse initiatives. Table S1 reports the full list of dimensions and indicators used. The selected dimensions spanned five broad domains:

- General description and location. Regions were identified according to Eurostat NUTS 2 classification, and codes of territorial units retrieved from the Italian National Institute of Statistics (Istituto Nazionale di Statistica (ISTAT)) were used for the geographic references of the initiatives (https://www.istat.it/it/archivio/6789). For the identification of the rural areas, we referred to the national classification adopted by the National Strategy Plan (NSP) for Rural Development at the NUTS 3 level (https://www.reterurale.it/areerurali), which distinguishes among zones A (i.e., urban areas), B (i.e., rural areas with intensive agriculture), C (i.e., intermediate rural areas) and D (i.e., rural areas with overall development problems):
- Contributions to public health, and activities and services supported. Contributions to public health were distinguished into physiological, psychological, and social, as presented in [6], assessed subjectively by interpreting the manifested aims and objectives of the FCIs or by eliciting the FCIs' managers when not clear otherwise. Activities and practices supported by the ecosystem through the initiative were inspired by Fish et al. [76], with the definition of CES and its framework developed by Scottish Natural Heritage [77] and then refined based on the FCIs' peculiarities;
- Target users and experience in the forest. Targets were categorized as (1) the general public, (2) specific, when referring to a homogeneous cluster of a population (e.g., children, the elderly, and immigrants), and (3) people with special needs (e.g., disabled or ill people). Experiences were distinguished into (1) self-leading without the need of a guide, (2) assisted, with the presence of a guide or practitioner, and (3) experiences effective both with and without a guide;
- Hosting natural area. Hosting natural areas were divided into forests, other wooded land as defined by the Food and Agriculture Organization [78], planted forests, parks intended as public spaces designated for recreational purposes with the presence of trees, and mixed ecosystems (e.g., forests, grasslands, and shrublands), together with not better specified areas. Data for all identified FCIs had been georeferenced, and a Q-GIS point vector (shapefile) was developed. By overlapping this with the 2018 Corine Land Cover data retrieved from the Copernicus database (www.copermnicus.eu), it was possible to associate FCIs to the corresponding (broad) forest categories (i.e., broadleaf, coniferous, or mixed forests);
- Managing organization. We categorized the typologies of management organizations (i.e., as private (nonprofit or for business), public, or public–private), the main typology of the actors involved in the management of the FCI, and the temporal scale of the initiative, whether permanent, on a seasonal basis, or an event or project with a definite lifespan.

To analyze the initiatives gathered in our sample, we employed a qualitative, interpretivist approach, which is appropriate for dealing with textual data [79,80]. We used a subjective interpretation of the information gathered through the desktop research, organizing the textual information of each initiative indexed into the repository. Data gathered and organized through the repository enabled a quantitative analysis to delineate a picture of this emerging sector in Italy.

Through an inductive approach based on observation, it was possible to further aggregate the FCIs in our sample based on their core activities and services supported. This allowed us to group the FCIs into typologies with a certain degree of coherence of activities performed, objectives of public health, and target users. At this stage, managing organization was not considered as a key parameter for FCI classification and therefore was not explicitly referred to. With this interpretation, we again performed quantitative analysis with pivot tables, observing the remaining four domains of information reported above (i.e., general description and location, contributions to public health, target users, and hosting natural areas), according to the different typologies of the FCIs identified. The discussion of results, also based on direct observation, field visits, and consultation with practitioners and experts, allowed for the generalization of a categorization scheme for FCIs that took into account the relationship with the hosting environment, the specificity of the public health objectives, and the target users addressed.

Setting the Scene of the Case Study

Forest cover has continuously expanded in Italy during the last decade (+4.9%), reaching 9,165,505 hectares of forests and 1,816,508 hectares of other wooded land [81]. Today, this represents 36.4% of the total land area, ranking Italy sixth in Europe in terms of relative forest cover [81]. Private forest ownership, mainly consisting of individual owners, accounts for 66.2% of the total forest area, with the remaining 33.8% being public (mainly municipal or regional) [82]. Although forests are expanding, harvest rates are far below the European average, and 60% of the yield consists of firewood. This means that Italian forests have low anthropogenic pressures, but on the other side, there is a strong dependence on imported wood. Private owners show low interest in managing forests, and indeed, forest expansion is mainly due to the abandonment of pastures and rural areas rather than resulting from afforestation or reforestation activities. Indeed, the main goal of Italian forest policies is soil and water protection, since the very irregular morphological features. Furthermore, 160,000 ha are old-growth forests, which are hotspots for forest biodiversity. According to Legislative Decree 42/2004, 100% of the forest area is subject to landscape restrictions, and 35% is under environmental protection. Italian forests are among the most biodiverse in Europe, hosting 117 different tree species, accounting for two-thirds of all European tree species. Italian forests are traditionally multifunctional and used for tourism and recreation. Recently, increasing societal engagement in forest wellness and a growing number of forest-based wellbeing, artistic, and cultural initiatives have emerged [81]. Most of these initiatives have just recently been started and represent a novelty for the Italian forestry sector. While there is vivacity at the ground level, the public sector and policy initiatives often lag behind. This ultimately results in a gap in the legislative and policy framework that should stay at the background of emerging initiatives, which results in fragmentation and poor integration or coordination. The few existing regulations for FCIs are developed at the regional level, mainly for educational initiatives supporting livelihood diversification and endorsed by regional authorities for agriculture and forestry. With these few exceptions, there are no official recognitions, regulations, quality standards, or inventories available for FCIs in Italy. Considering the challenges in public health and the main trend in the forestry sector, we believe Italy can provide interpretations and insights that can also be useful for other countries.

3. Results

3.1. General Description of FCIs Characteristics

We identified 232 FCIs in Italy (please refer to Supplementary Materials for the complete repository), and a summary of the results is presented in Table 1.

Table 1. Summary of the Results.

Dimension	Indicators	*n.*	%
General Description and Location	Status		
	Active	181	78.02
	Pilot	1	0.43
	Design Phase	5	2.16
	Abandoned	16	6.9
	Unknown	29	12.5
	Scale of action		
	Local	190	81.9
	Regional	35	15.09
	National	6	2.59
	International	1	0.43
	PSN rural class		
	A	67	28.87
	B	38	16.37
	C	40	17.24
	D	78	33.62
	NA (Not Applicable)	9	3.87
	Type of Initiative		
	Permanent	130	56.03
	Seasonal	46	19.83
	Event or Project	43	18.53
	Network or Research	9	3.88
	NA	4	1.72
Contribution to Health and Activities and Services Supported	Contributions to health **		
	Physiological	68	29.31
	Psychological	86	37.07
	Social	183	78.88
	Activities and services supported by FCIs **		
	Sport	42	18.1
	Recreation and Tourism	96	41.38
	Adventure and Wilderness	106	45.69
	Psychophysical Therapy or Rehabilitation	29	12.5
	Wellness and Relaxation	74	31.9
	Spirituality	24	10.34
	Social Cohesion	47	20.26
	Social Inclusion (Social Care)	28	12.07
	Inspiration (Artistic or Cultural)	63	27.16
	Learn from Nature	118	50.86
	Livelihood Provision and Income diversification	13	5.6
	FCIs with Multiple Contributions	219	93
Target Users and Experience in the Forest	Target Users		
	General Public	98	42.24
	Specific Target	107	46.12
	Special Needs	25	10.78
	Mixed or Not Specified	2	0.86
	User's experience		
	Self-Leading	40	17.24
	Assisted	159	68.53
	Both	28	12.07
	NA	5	2.16

Table 1. *Cont.*

Hosting Natural Area	Hosting Area	Fixed (One)	124	53.45
		Fixed (More Than One)	12	5.17
		Itinerant	65	28.02
		NA	31	13.36
	Ecosystem	Forest or Woodland	96	41.38
		Park	19	8.19
		Planted	10	4.31
		Mixed or Unspecified	107	46.12
	Forest Type *	Bradleaved	65	28.63
		Coniferus	21	9.25
		Mixed	23	10.13
		NA	118	51.98
Managing Orgnization	Type of Organization	Private Nonprofit	127	54.74
		Private for Businesses	74	31.89
		Public	14	6.03
		Public–Private	15	6.46
		NA	2	0.86
	Actors	Civil Society or Individuals	179	77.15
		Governance or Public Bodies	9	3.87
		Academic or Technical Bodies	2	0.86
		Mixed	41	17.67
		NA	1	0.43
Source of Information		Scientific Literature	0	0
		Gray Literature	8	3.45
		Website	196	84.48
		Personal Contact	28	12.07

* Percentages were calculated from a total of *n.* = 229 entries, as it was not possible to identify an exact location for three forest care initiatives (FCIs). ** Percentages were calculated from a total of *n.* = 232 entries; however, each FCI could include multiple contributions and services.

In 22% (*n.* = 52) of the cases, it was not possible to date back to the exact year of launch due to a scarcity of information (Figure 1). However, FCIs have been continuously growing since 2012, peaking in 2017 with 27 new initiatives.
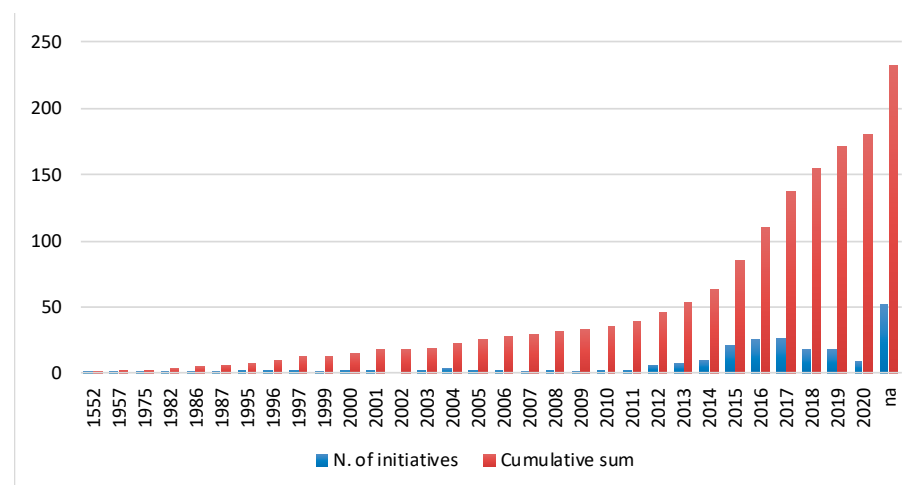

Figure 1. Number of initiatives grouped by year of establishment and the cumulative sum.

The FCIs analyzed are predominantly active at the local level, meaning that the supply of the wellbeing services is linked to a specific territory, but the users might hail from the entire national territory. There is an average of *n.* = 12.6 FCIs per region, with a maximum

of *n.* = 47 FCIs in Trentino-Alto Adige/Südtirol (northeast) and no FCIs found in Molise (southeast) or Calabria (southwest) (Figure 2a).
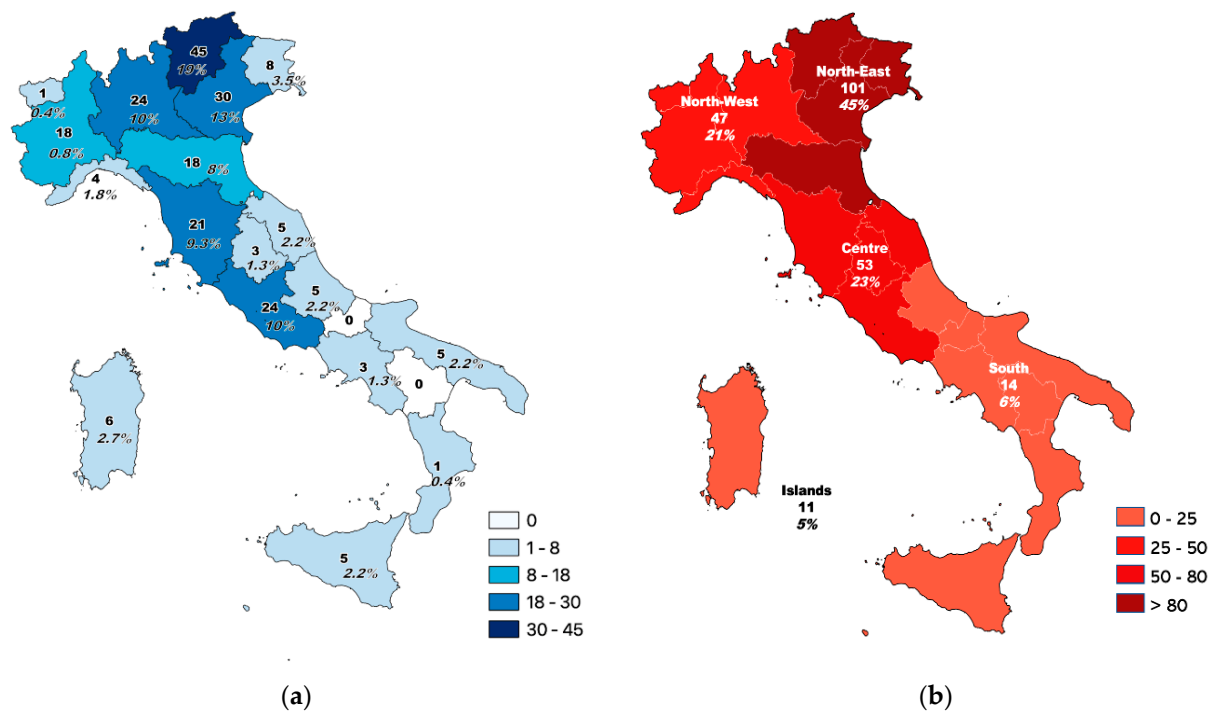

Figure 2. Number and percentage of FCIs divided by (**a**) NUTS2 regions and (**b**) macro areas, as identified by Istituto Nazionale di Statistica (ISTAT) classification.

About 66% of the FCIs were located in the north of the country (Figure 2b), in particular in the northeastern regions (e.g., Trentino-Alto Adige/Südtirol, Veneto, Friuli-Venezia Giulia, and Emilia-Romagna). About 34% of the FCIs were in rural areas with overall development problems (class D). The share of FCIs in rural areas increased to 67% when initiatives located in class B (intensive agriculture rural areas) and C (intermediate rural areas) areas were considered.

About 37% of the initiatives presented multiple contributions to health. The majority of the FCIs (79%) were motivated by the generation of social benefits for people's wellbeing. Almost all (94%) of the FCIs presented multiple (i.e., at least two) activities and interactions for supporting wellbeing, with a prevalence of learn from nature, wilderness and adventure (46%), tourism and recreation (41%), and wellness and relaxation (32%) initiatives.

There was a fair division between FCIs designed for a specific group of people and those intended for the general public. In 68% of the cases, the users were assisted and guided during their experience in the forest, while self-leading experiences were less common.

The general tendency was to utilize one single and fixed natural area (53%) for the activities, with the initiatives at regional scales keener on being itinerant within the regional territory. The very few initiatives active at the national and international levels were prevalently FCIs proposing training and courses.

Despite the inherent bond with woodlands FCIs are supposed to have, the information about the hosting natural space was marginally present in FCIs' communication and publicly available information. Indeed, in 46% of the cases, specific information on the type of ecosystem used for hosting activities was not available, or the activities were carried out in more than one ecosystem (often a combination of forest and non-forest mountain ecosystems). Where information on the hosting environment was disclosed, forest or woodland areas were the predominant hosting environments for the FCIs, with broadleaf forests being reported by 29% of the initiatives. Unfortunately, most of the FCIs (52%) did

not report data on the forest type, or it was not possible to clearly link initiatives to one or more specific forest types.

Private organizations managed 87% of the FCIs, of which 55% were nonprofit and 32% were for business. Civil society and individuals were the main typology of stakeholders involved in providing wellbeing benefits from forests (77%). In 55% of the cases, FCIs were managed by private nonprofit subjects (e.g., civil society organizations or individuals) offering year-round services, which did not necessarily imply that they were active every day, but they had structured programs adapting to the seasons' conditions.

4. Discussion

FCIs can be viewed as an umbrella term summarizing a wide range of activities, based on which it was possible to scout and analyze 232 initiatives complying with the definition.

The analysis revealed that FCIs in Italy are mainly private initiatives, specifically nonprofit ones, involving civil society and individuals. This gives rise to two considerations. On the one side, it confirms the vivacity of this emerging sector and the increasing role of civil society in providing inclusive services for individuals and communities. On the other, it can be seen as a signal of low support from public administrations toward forestry-related sectors [83,84]. The results confirmed the assumptions that FCIs provide multiple benefits for wellbeing, and also that single initiatives are engaged in delivering multiple services. Furthermore, FCIs seem to be a valid opportunity for rural areas, namely for expanding the provision of inclusive services for health and wellbeing in marginal areas characterized by a lack of services and showing high depopulation rates. This, enhanced by collaboration opportunities with other sectors (e.g., health, education, and social care), makes FCIs a strategic opportunity to support "future green forest jobs" [85]. In order to better explore this opportunity, it would be necessary to assess links between sustainable forest management and FCIs.

FCIs are concentrated in Northern Italy, where productive high forests are also located. This might reveal a preference for high forests for FCIs—which should be better investigated—and also that the provision of sociobehavioral and CES benefits can, in principle, coexist with traditional forest activities. FCIs are largely located in Alpine regions and are particularly devoted to wellness tourism and active holidays. On the one side, it is possible to argue that mountains and pristine landscapes are the preferred location for regenerative purposes. On the other, strong tourism governance might favor the development of such FCIs. The analysis, however, did not significantly fill the information gap about the preferred and more suitable hosting ecosystems for FCIs [59].

4.1. FCIs Characterization into Typologies

Using observation and induction, a case-based clustering of FCIs into typologies was done. The clustering was based on the core activity or services proposed, according to the available information collected through desktop research. Analysis performed after clustering highlighted that the various FCI typologies showed differences in terms of health and wellbeing objectives, the target users they addressed, and the substitutability of the environments hosting them. A summary of the reinterpretation of results, enabling different predominant patterns to emerge, is proposed in Table 2, where the seven typologies identified are described and the associated category is anticipated (for a full description, see Section 4.6). The results of Table 2 are discussed in Sections 4.2–4.5.

Table 2. Summary of the main FCI typologies included in the study, their key features, and their categorization.

Typology	N (%) of Cases Identified within the Repository	Description	Category	Contributions to Health and Activities Supported	Target Users	Environment Substitutability
Forest-based Therapy (FT)	9 (4%)	FCIs focused on treatment and rehabilitation practices, based on contact with forest ecosystems and requiring direct involvement and collaboration of the health sector. Therapies are transferred and adapted to the forest environment with the collaboration of different areas of expertise.	Therapy and rehabilitation	Physiological, psychological, and social	Special needs Assisted	- Fairly divided between fixed (one and more than one) and itinerant - Forests and woodlands - Rural area (D)
Social Inclusion (SI)	19 (8%)	FCIs aimed at providing marginalized groups of people with inclusive opportunities for improving social and emotional skills, or specific working skills, reducing inequalities in the access to nature with the final objective to promote their social integration. This is normally achieved via measures delivered by trained professionals (non-clinical services).	Prevention and Promotion	Social (and psychological)	Special needs Assisted	- Itinerant - Mixed ecosystem, mainly involving mountains - Urban area (A): this is referred to the headquarters, and activities are carried out in mountainous areas

Table 2. *Cont.*

Typology	N (%) of Cases Identified within the Repository	Description	Category	Contributions to Health and Activities Supported	Target Users	Environment Substitutability
Wellness (WELL)	64 (28%)	FCIs promoting healthy lifestyles through light physical activities and sensory experiences in the woodlands, such as forest bathing, mindfulness, breathing exercises, forest spas, yoga, and other activities for relaxation and personal growth in the forest. Such initiatives encourage a soulful connection with nature, prevent stress and technostress, and support mental restoration.	Prevention and Promotion	Psychological (and physiological)	General public Assisted	- Divided between fixed and itinerant natural area - Mainly forests and woodlands - Rural area (D)
Education (EDU)	89 (38%)	FCIs involving experience-oriented learning in nature, environmental education, active engagement with natural elements to develop gross and fine motor abilities, inspiration of creativity and imagination through interaction with natural environments, and stimulating positive behaviors toward nature. FCIs falling within this typology are mainly, but not only, addressed to children and young kids.	Synergic benefits	Social	Specific target Assisted	- Mainly one fixed natural area, with $\frac{1}{4}$ of the initiatives not having enough information mixed or not specified, with mainly no information on the ecosystem - Urban area (A)

Table 2. *Cont.*

Typology	N (%) of Cases Identified within the Repository	Description	Category	Contributions to Health and Activities Supported	Target Users	Environment Substitutability
Artistic and Cultural Inspiration (ART)	38 (16%)	FCIs where forest and woodland areas are transformed into open-air museums, populated by site-specific art pieces or by private collections displayed in the natural environment. Woodlands used as stages for concerts, theatrical pieces, and workshops are also included.	Synergic benefits	Social	General public Self-leading	- One fixed natural area - Mainly forests and woodlands - Rural area (D)
Services for the Community (SOCIAL)	8 (3%)	FCIs aimed at enhancing social cohesion, creating a sense of community while actively engaged in forest management. This includes everything from social forestry to initiatives in which the forest nurtures spiritual values and through the creation of burial forests or by hosting spiritual communities and their deities. Community food forests also fall under this category, providing organic food, opportunities for learning about sustainable agricultural practices, occasions for social contact and bonding, enhancing the sense of place, and a refuge from urban routine and stress.	Synergic benefits	Social	General public Self-leading	- One fixed natural area, with initiatives often aimed at creating a community around a specific area - Planted forest - Urban area (A): food forests for communities and projects for enhancing social cohesion

Table 2. *Cont.*

Typology	N (%) of Cases Identified within the Repository	Description	Category	Contributions to Health and Activities Supported	Target Users	Environment Substitutability
Wilderness and Adventure (WILD)	5 (2%)	FCIs offering, especially to city-dwellers with decreasing occasions for deep contact with nature, the opportunity to stay in the wild while experiencing a sense of adventure. Such initiatives offer unique opportunities to interact with nature in the wild and learn new skills, from survival to fine motricity and collaborative problem-solving.	Synergic benefits	Social	General public Assisted	- Mainly one fixed natural area (also itinerant) - Mainly forests and woodlands - Rural areas (D)

4.2. General Description and Location

As seen in the results, information on the hosting environments and locations of FCIs was scarce. This seems to further confirm the limited focus on the environment when speaking of forests and health. FCIs belonging to the ART and EDU typologies were the oldest groups of initiatives, dating back to the late 1950s (except for Sacro Bosco di Bomarzo, founded in 1552), while the other FCIs were established around 2000. Geographical distribution followed the general trends described in Section 3.1, with the only exception being EDU initiatives, which were mainly located in Central Italy, in particular in Lazio (17%). This can be attributed to the fact that one of the first Italian forest kindergartens was created in Lazio in 2012, and it is still very active in lobbying, advocating, and training, with the aim to support the development of outdoor schools and kindergartens.

EDU and SI initiatives were mainly located in urban areas, while the other FCI categories were mainly located in rural ones. This may be partially explained by considering that the EDU typology is mainly composed of forest schools and kindergartens that are active 4–5 days a week. Thus, it is legitimate to suppose that being close to the urban and peri-urban area might contribute to success and accessibility. For the SI typology, the main reason to be located in urban areas was the methodological choice we made to register the FCIs by their legal or operative headquarters when the initiative was reported as itinerant. On the other hand, the WELL typology alone comprised 50% of the total initiatives located in zone D rural areas, mainly in Trentino-Alto Adige since 48% of the WELL FCIs are located in this region.

4.3. Contributions, Effects, and Activities and Practices Supported

We observed a clear relationship between FCI typologies and the declared contribution to wellbeing. The FT typology has a predominance of physiological contributions, but nevertheless they are quite balanced with the other two contributions. Since FCIs included in the FT typology are partnering with the social and health care sectors, they are more likely to be the only typology able to pursue specific physiological contributions to health which require specific competencies and instruments to be assessed. The ART, EDU, SI,

and SOCIAL typologies claim social contributions to wellbeing for almost all of their initiatives. These FCIs would aim at social contributions to health with different levels of specificity, also according to the needs of their target users. The WELL typology is the only category of FCIs with a clear predominance of claimed psychological contributions to health. We observed that, apart from FT initiatives that presented a mix of multiple contributions in almost all cases, just the WELL and SI typologies showed a predominance of one type of contribution closely associated with another. In more detail, the WELL FCIs claim psychological (in 83% of the initiatives reviewed) together with physiological (67%) contributions. SI FCIs, on the contrary, claim social contributions in all the initiatives reviewed, followed by 50% of reviewed initiatives in which psychological contributions are also claimed.

4.4. Target Users and Experience in the Forest

While most of FCIs are offered to the public at large or specific target groups, initiatives categorized under the FT rehabilitation and SI typologies are mainly (i.e., 94% and 55%, respectively) targeted at people with special needs. Consequently, they require specific activities, programs, and trained staff. Whereas 91% of the EDU initiatives have a specific target of users (i.e., children engaged in outdoor or environmental education), only the ART and SOCIAL FCIs propose initiatives for wellbeing that are mainly self-led by the users, meaning that the natural area is accessible and the benefits are enjoyable without the mediation of an expert or a guide.

4.5. Hosting Natural Area

Most of the FCIs analyzed were linked to a fixed natural area or areas. Indeed, both the WELL and WILD categories showed a predominance of initiatives bonded to a fixed natural area (48% and 60%, respectively) and itinerant initiatives (35% and 40%, respectively). Nevertheless, FT initiatives presented a fair division between the three modalities identified (i.e., one fixed area, more than one fixed area, and itinerant). This shows that within FCI categories, there can be a variability determined by the type of bond with the hosting natural ecosystem. Although most of the initiatives are based in forests and woodland areas, options reported for the EDU and SI typologies were prevalently mixed or not specified. The not specified option mainly refers to EDU initiatives, as information on the natural environment is often omitted. SI initiatives are mainly associated with the mixed entries, since they often involve woodlands and other ecosystems in mountainous areas. As for the type of forest, no deviations from the general trends observed for all FCIs could be observed with regard to individual FCI categories, due to the lack of detailed information with regard to most of the FCIs.

Forests and woodlands can effectively host both specific treatments and interventions with broader aims for wellbeing promotion. However, we observed different levels of substitutability of the forest ecosystem, with the wellbeing effects remaining the same. Substitutability can occur between (1) forests (or woodlands) and other ecosystems. For example, an FCI promoting barefoot walks, which can also be held in a non-forest context without losing its purpose and core values, but being in a forest would guarantee some benefits [6], and (2) different forests and even trails within the forest. For example, the forest therapy bases in Japan (For more details on forest therapy bases and examples, readers can refer to the website https://www.fo-society.jp/therapy/cn45/index_en.html (accessed on 20 November 2020)) are strictly site-specific, depending on certified trails on the basis of ad hoc clinical studies assessing their effectiveness. In this case, changing the forest site can modify the type or intensity of any health effects, as well as the objectives of the intervention. Yet, there can be substantial differences within the same class of initiatives that can be captured through substitutability. For example, some WELL FCIs are more linked to a fixed natural space, likely (1) for logistic or practical reasons (e.g., ownership or proximity), and (2) for the role of specific environmental features (e.g., the emission of terpenes and monoterpenes or aesthetic value). On the contrary, itinerant

WELL FCIs require a guide to allow participants to enjoy the experience in the forest, while less importance is given to the specificity of the forest elements. These aspects might enrich the perspectives of recent works that tried to identify and inventory natural spaces, enabling the provision of sociobehavioral and CES benefits using satellite imagery, spatial measurement tools, and participatory instruments (e.g., Google or Flickr.com) [49,86,87]. A deeper understanding of the natural spaces and their substitutability can increase the impact of FCIs and provide information for planning and management [86].

4.6. FCIs Categorization Scheme

We observed differences among FCI typologies both in terms of users and in the specificity of the care provided, from treatment sessions structured on users' needs with assisted interventions (e.g., forest-based therapy for people with disabilities) and self-help interventions (e.g., social prescribing for people at risk of cardiovascular diseases) to other interventions aimed at a broader promotion of wellbeing and healthy behaviors (e.g., forest bathing trails open for visitors).

It seems that the more specific the health benefits the initiative aims to achieve are, the more specific the targeted users are, while the substitutability of the forest ecosystem or even specific trails apparently decreases. According to this, we propose an inclusive and operational form of categorization, taking inspiration from and adapting previous works and literature from nature-based solutions [2,29,36,88]. Three categories (plus one) of FCIs are drafted with descriptions provided in Table 3. These categories are identified depending on how they move along three gradients (substitutability of the forest ecosystem, target users, and specificity of the health objectives), as illustrated in Figure 3.

Table 3. Description of the three categories of FCIs identified.

| Categories	Descriptions
Treatment and Rehabilitation	Initiatives created in close collaboration with the health sector and professionals, where specific characteristics of the forest environment are used to develop ad hoc treatments, rehabilitation, and integrative therapies tailored for specific health conditions (both physical and psychological). Though not exclusively, they tend to address small groups of people with homogenous needs and are often proposed as a program rather than one-off visits. Objectives, activities, and the use of the forest environment tend to be tuned to target users 'needs.
Prevention and Promotion of Health and Wellbeing	Initiatives using the forest environment, taking advantage of the positive effects of forest exposure via specific activities and approaches for health promotion and preventive purposes (i.e., primary, secondary, and tertiary prevention). Such services are delivered to a large population, both with one-off and recurrent visits. The involvement of the health sector is not strictly necessary, as clinical services and the assistance of professional doctors are not needed.
Synergic (Wellbeing Benefits)	Initiatives not aimed at providing specific health outcomes, but rather at enriching the social dimension of wellbeing while providing indirect or collateral health benefits through contact with the forest ecosystem. They enable the creation of synergies between the forest, health, and other sectors, supporting cross-sector collaborations across the education, tourism, recreation, and art and culture sectors.
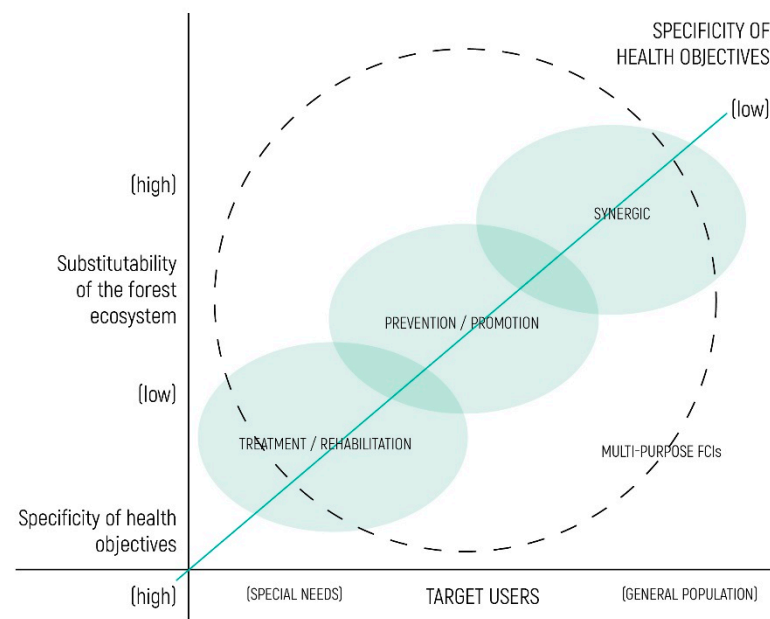
Figure 3. Categorization scheme of FCIs along three gradients.

The analysis and interpretation of real case-based FCIs typologies allowed us to see how single categories were flexible and single FCIs had degrees of freedom of movement across the gradients. An analysis at the FCI level would enable one to further explore the differences and new nuances of the proposed scheme.

4.7. Strength and Limits

By adopting an inductive process, this study started from the identification and analysis of activities and practices supported by forest ecosystems to highlight a representative set of activities and interactions and, finally, develop a possible framework for the main typologies of FCIs.

Besides contributing to shedding light on FCIs in general, the study investigated in detail the Italian context, emphasizing its specificities. Including just a narrow range of values (e.g., recreation and tourism) in planning and decision-making may cause conflicts between different stakes, missed opportunities for managers and policymakers, the increased possibility for policy failures, and ultimately, a reduction in human wellbeing [76]. The ART category emerged as specific to the Italian context, as it was not reported in other FCI reviews. Nevertheless, even if a characterization of FCIs by core activity is operational and easily understandable, almost all FCIs are characterized by multiple services, activities, and purposes. Both the definition and the categorization presented here are purposely flexible because, by considering the multifunctionality and the holistic approach that often characterize FCIs [36,89], a clear-cut definition and clustering is not possible and even not desirable.

Among the limitations of the study, the absence of a shared language or terminology, definitions, and databases were key, and this challenged the aim of the repository to reach a realistic representation of the number and typologies of FCIs in Italy. The interpretation of new concepts, which are often used with different meanings among the involved sectors, is also a challenge. Relying on disclosed information available online on the one side enhances the readiness of data collection, but on the other, it exposes studies to the risk of inaccuracy and data shortages. In fact, FCIs involving small groups of people with special needs are rarely made public through the media, presumably because they do not need to enlarge their customer base. SI initiatives are likely underrepresented in our study because of this. FCIs related to education and forest schools are mainly advertised through social media, like Facebook, with very basic information about the services offered and, in particular, the features and roles of forest ecosystems. Arguably, this is due to the fact that

these initiatives are developed and managed by people outside the forest sector and with no specific forestry background.

Finally, limited information on the natural areas often made it impossible to precisely locate the FCIs. For standardization and readiness, we decided to lose some information and register one location per FCI (even when they were itinerant), as well as the operational headquarters when the location of the natural area was not clear.

5. Conclusions

This paper proposes an umbrella FCI term to develop a categorization framework for all initiatives using contact with the forest and woodland ecosystem as a means to increase the level of health and wellbeing of people and communities. Through extensive data collection and review, we inventoried FCIs in Italy. This allowed deepening of the knowledge about FCIs, identifying the typologies of initiatives that are sprouting and characterizing them for their differences and commonalities. These initiatives represent an element of novelty in respect to the traditional recreational and tourism activities linked to the forest sector. Here, the novelty is intended as an original combination of target users (i.e., specific targets and people with special needs), activities proposed (i.e., new services or new services for the sector), partnerships and stakeholders involved (i.e., collaboration with the health and social sectors), and the use of the forest environment (e.g., to treat specific diseases, provoke behavioral changes, inspire, or help relax). This analysis reveals that, in the last few decades, there was growth and spreading of FCIs in Italy, showing the great vitality of the private nonprofit sector. The analysis confirmed that a great wealth of wellbeing services has been delivered by forests in rural and marginal areas, as well as in urban and peri-urban areas, providing people with inclusive wellbeing services, opportunities for new green jobs, and business. In the effort to enhance bioeconomy, the emerging FCIs might indeed represent an opportunity for valuing forest multifunctionality and creating new spaces for sustainable economic and rural development through collaboration across different sectors. Nevertheless, in order to exploit these opportunities, knowledge about the initiatives and the role of the forest ecosystem in delivering wellbeing benefits shall be improved.

The proposed interpretation of categories and gradients advances the consideration of the environment as a pawn of the game, pushing for more research not just on the specific features (and their changes) responsible for wellbeing, but also on different green spaces that may allow the provision of such services. Enriching the knowledge about the dynamics through which FCIs can move along the three gradients can allow support for the role of both rural and urban forests as strategic assets for wellbeing. This also seems to gain increasing relevance in light of the recent need to have accessible and healthy natural areas to both prevent and cope with the spread of pandemics such as COVID-19 [90].

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