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Potential for Applying Intergenerational Practice to Protected Area Management in Mountainous Regions

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One way of preserving the natural and cultural diversity of mountain areas and supporting their sustainable development is the establishment of protected areas. The scientific literature acknowledges the importance of participation by local stakeholders and of considering social cohesion in protected area management. Intergenerational practice has been shown to enhance participation and improve social cohesion; however, its potential role in natural resource management has not been considered by the research community. This paper explores the potential for integrating intergenerational practice into protected area management in mountainous regions, guided by 3 research questions: What challenges of protected area management could benefit from intergenerational practice? How can intergenerational practice help to address these challenges? And how could intergenerational practice be more strongly integrated into current protected area management? The paper focuses on selected management challenges, mostly related to the development function of protected areas, and suggests intergenerational practice solution pathways for each challenge, derived from qualitative content analysis of the literature, interviews with protected area and regional development experts, and participation in the project Big Foot: Crossing Generations, Crossing Mountains, which tested intergenerational learning approaches in 3 rural municipalities—one each in Bulgaria, Greece, and Italy. Recommendations are proposed for integrating intergenerational practice into protected area management policy and practice at the global, regional, and local levels.

Keywords: *Intergenerational practice; intergenerational learning; protected area management; mountain regions; Bulgaria; Greece; Italy.*

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Mountain areas: sustainable development challenges

Mountain protected areas and local participation

Mountainous areas in Europe are centers of natural and cultural diversity. However, their inhabitants often face a lack of economic opportunities and limited opportunities to participate in local development processes. This causes outmigration and abandonment of rural settlements, particularly by younger people, leading to a loss of cultural traditions and degradation of cultural landscape features (Jansky et al 2002; Jandl et al 2008; Maselli 2012). The remaining population, often of the older generation, faces a lack of infrastructure and even fewer economic opportunities.

Establishment of protected areas in mountainous regions constitutes a key way of preserving biological diversity—an important aspect of sustainable regional development (Hamilton 1993; CBD Secretariat 2008).

While conservation remains the primary goal of all protected areas, some protected areas have additional objectives (Mose 2007). These include preserving traditional and cultural practices, supporting the socioeconomic development of the surrounding communities, tourism development, education, and research (Thomas and Middleton 2003; Wallsten 2003; Getzner et al 2010). Thus, such protected area designation is particularly relevant in densely populated Europe (Mose 2007), including in mountainous regions. At the same time, this diversity of objectives, in addition to the numerous tasks of nature protection, poses a number of challenges for protected area management.

Integration of local values and perceptions into protected area management is important for addressing these challenges (Zanon and Geneletti 2011). The scholarly literature on protected areas and sustainable development acknowledges the importance of participation (Conrad et al 2011a, 2011b) and

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comanagement by local stakeholders (eg Heeb and Hindenlang 2008; Berkes 2009). Factors associated with successful conservation comanagement initiatives include creating or enhancing social capital; engaging with local cultural traditions, institutions, and leaders; and ensuring local participation in project initiation, design, and daily operation (Brooks et al 2013).

While community participation can enhance protected area management, it poses a number of challenges in itself, such as the lack of interest, time, and financial resources among prospective stakeholders. Wallner and Wiesmann (2009) identified several challenges to multistakeholder participation in managing a world heritage site, including developing a feeling of belonging to the region among the local population; providing economic, living, recreational, and natural space for sustainable development; promoting collaboration between schools; developing tourism; and resolving conflicts among the diverse interests. Stoll-Kleemann and Welp (2008) advocated more experimentation with participatory methods to achieve successful biosphere reserve management.

This paper proposes an approach that has been shown to be useful in addressing several of these challenges but has not yet been considered in the context of protected area management: intergenerational practice. This approach could also address the lack of research on social–ecological systems in mountainous regions that has been discussed in this journal (Björnsen Gurung et al 2012).

Intergenerational practice

Intergenerational practice (IP) brings people of different generations together and builds on the positive resources they can offer each other via purposeful, mutually beneficial activities, which can also benefit participants' communities (Buffel et al 2014). IP has for centuries provided an informal way of transferring "knowledge, skills, competencies, norms and values" within families (Hoff 2007, in Newman and Hatton-Yeo 2008: 31) and has recently become more relevant in a broader extrafamilial social context (Boström 2003; Newman and Hatton-Yeo 2008).

IP has received increasing attention due to demographic changes such as aging and changing family structures. Its role has been recognized in maintaining knowledge and facilitating progress in professional organizations (Orzea and Bratianu 2012), developing sustainable communities (Buffel et al 2014), and fostering more inclusive and cohesive societies (Newman and Hatton-Yeo 2008).

IP could be particularly relevant in the context of the economic marginalization of rural mountain areas that drives younger people away, depriving those areas of new perceptions and skills that could be useful in developing them, such as information and communication technology and entrepreneurship. Moreover, lack of interaction between younger and older generations causes loss of traditional knowledge on crafts, folklore, traditional land use, and natural and cultural history.

Intergenerational practice in the context of protected areas

Mountain protected areas should, in addition to their primary nature protection function, counter the above processes by supporting socioeconomic development of the surrounding communities; in some cases they should be able to minimize depopulation (Knaus 2013). Given their demographic challenges, these protected areas could benefit from IP with respect to their role in community development, as well as in implementing other objectives.

Several studies suggest potential impacts of IP on environmental regeneration and preservation activities (Sanchez et al 2008; Springate et al 2008; Buffel et al 2014). Multigenerational traditional knowledge on coevolution of local ecosystems and social systems, long-term knowledge accumulation in communities, and knowledge transfer from one generation to the next have been identified as critical to communities' ability to adapt to change and to community-based conservation and comanagement of natural resources (Berkes 1999, 2004; Olsson et al 2004). Outside academia, several environmental organizations have identified the importance of intergenerational activities to safeguarding the environment. For example, the US Environmental Protection Agency organizes and promotes intergenerational activities via its Aging Initiative (document 14 in Table 1). The Intergenerational Partnership of the World Conservation Union (IUCN) and the WILD Foundation in the United States piloted initiatives focused on intergenerational cooperation in the context of nature protection (documents 7 and 15).

However, IP has never been explicitly approached as a potential aspect of protected area management. This article aims to address this gap by exploring 3 research questions: (1) What are the challenges of protected area management that could benefit from IP? (2) How can IP help address these challenges? (3) How could IP be more strongly integrated into current protected area management practices?

Experts, practitioners, and cases consulted

This study used an eclectic methodological approach, including a literature review, a survey of existing initiatives in the wider field of IP and spatial development, semistructured interviews, and 3 case studies, based on the participation of the lead author in the project "Big Foot: Crossing Generations, Crossing Mountains" as a consultant of the United Nations Environment Programme (UNEP), Vienna Office, Secretariat of the Carpathian Convention. The methods

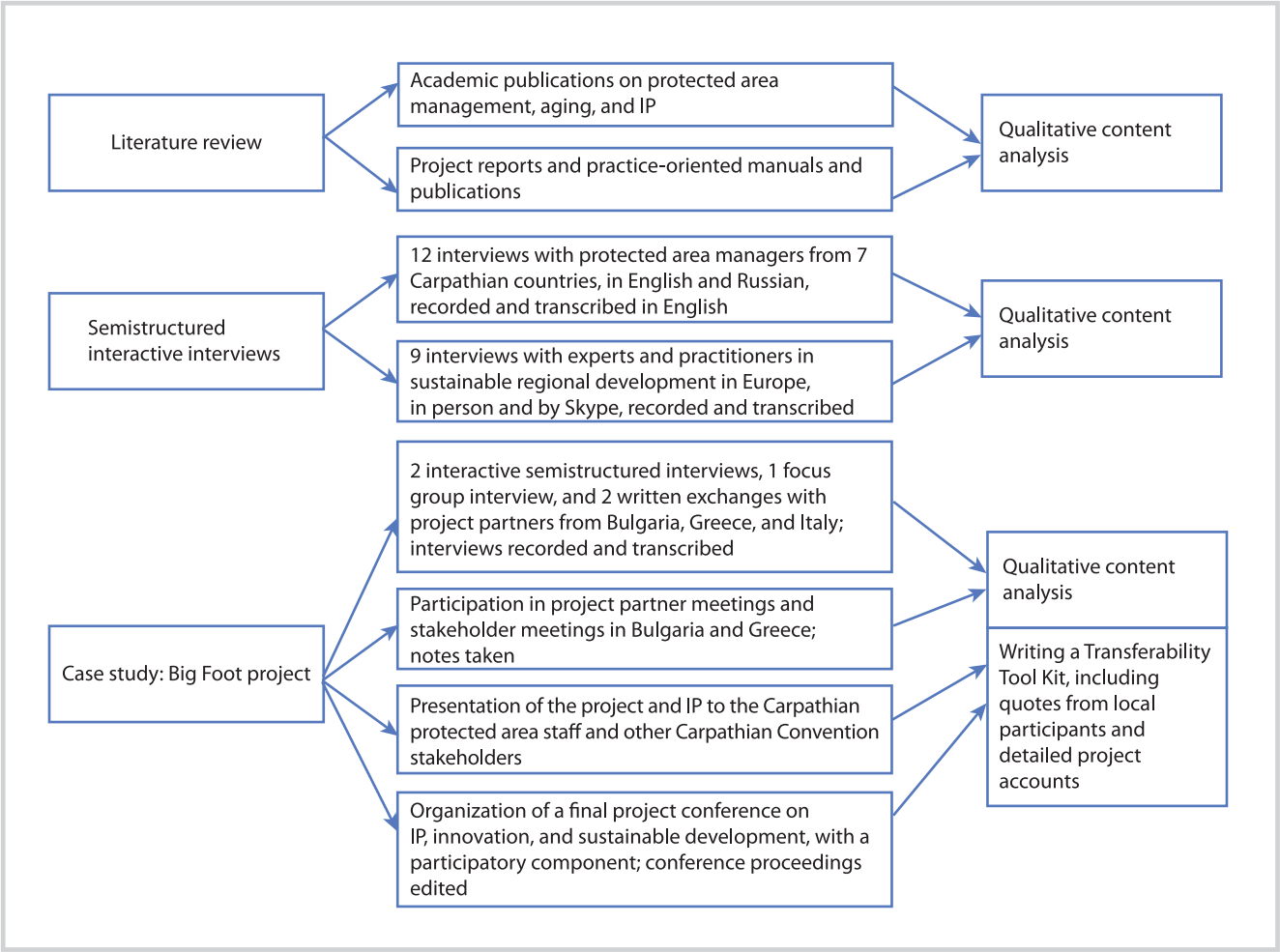
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TABLE 1 Documents analyzed for this study.

Document number	Document
1	***Almeida Pinto T, editor.*** 2009. *Guide of Ideas for Planning and Implementing Intergenerational Projects. Together: Yesterday, Today and Tomorrow. MATES Partnership.* Rääma, Estonia: Rääma, Young People Union Youth.
2	**Big Foot Project.** 2013. Tool 1: Participant Feedback Sheet. Meteora, Greece. Received by email from Thomas Fischer, MENON Network EEIG on 23 May 2013.
3	***Commune di Gubbio, Gouré s.r.l (Big Foot project).*** 2013. *The Citizens of Gubbio Guide Us Through Its Own Cultural Heritage.* www.bigfoot-project.eu/tl_files/BIGFOOT/Publications/Intangible_Heritage_Guides/Intangible_Heritage_Guide_Gubbio_EN.pdf; assessed on 7 August 2014.
4	***EAGLE Project.*** 2008. *Intergenerational Learning in Europe. Policies, Programmes and Practical Guidance. European Approaches to Inter-Generational Lifelong Learning.* Nuremburg, Germany: FIM NewLearning, University of Erlangen–Nuremburg.
5	***Fischer T.*** 2013. *Intergenerational Approach Handbook. Big Foot. Crossing Generations, Crossing Mountains* Brussels, Belgium: MENON Network EEIG. http://www.bigfoot-project.eu/intergenerational-approach-handbook.html; accessed on 3 January 2015.
6	***Gouré s.r.l (Big Foot project).*** 2013. 4th Coordination Meeting, Kalambaka, 13 and 14 December. Received by email from Barbara Di Pietro, Gourés, on 10 January 2013. Information about the meeting described as well as other project meetings can be found on the project website, http://www.bigfoot-project.eu/project-partner-meetings-280.html; accessed on 3 January 2015.
7	***Hesselink F, Stucker D.*** 2008. *Buddy Experiment. Report on Experiment With Intergenerational Partnership Through Pairing of Different Generations.* Gland, Switzerland: IUCN Commission on Education and Communication. http://intergenerationalpartnership.wikispaces.com/BuddyExperiment; accessed on 3 January 2015.
8	***Lutman J.*** 2011. *Outdoor Explorers Mentoring Program: A Program Replication Guide.* Missoula, MT: Arthur Carhart National Wilderness Training Center. www.wilderness.net/toolboxes/documents/education/OEMP_Replication_Guide.pdf; accessed on 7 August 2014.
9	***Machold I.*** 2004. LEADER—Case study Vorarlberg (Austria). Vienna, Austria: ESPON project 2.1.3. www.berggebiete.eu/cm3/de/download/viewdownload/13-laendliche-entwicklung/253-artikel-machold-case-leader-espon.html; accessed on 7 August 2014.
10	***Mitrofanenko T, Di Pietro B, Sannipoli M, Stoyanova V, Strapatsa C.*** 2013. *Transferability Tool Kit. Big Foot. Crossing Generations, Crossing Mountains.* Vienna, Austria: Project Big Foot.
11	***Panagiotis P, Vaios K.*** 2013. *Participatory Mapping—Methodology & Guidelines Using the Bottom-Up Approach Method. WP5 Participatory Mapping. Big Foot. Crossing Generations, Crossing Mountains.* http://www.bigfoot-project.eu/participatory-mapping-guidelines.html; accessed on 3 January 2015.
12	***Rupprechter M.*** 2008. *Intergenerational Learning in Organisations (IGLOO), Progress/Final Report. Public Part.* http://eacea.ec.europa.eu/llp/project_reports/documents/grundtvig/multilateral_projects_2007/progess_reports_2007/gru_134587_igloo.pdf; accessed on 8 August 2014.
13	***University of California, Merced.*** 2014. *Yosemite Leadership Program. Developing Tomorrow's Environmental Leaders Today.* http://ylp.ucmerced.edu; accessed on 7 August 2014.
14	***United States Environmental Protection Agency.*** 2013. *Intergenerational Activities.* www.epa.gov/aging/inter-gen-activities.htm; accessed on 7 August 2014.
15	***WILD Foundation.*** 2014. *Intergenerational Collaboration.* www.wild.org/main/how-wild-works/intergenerational/; accessed on 7 August 2008.
16	***Wildlands Restoration Volunteers.*** 2014. *Gaining Ground.* http://wlrv.org/newsletter_Fall_2014/; accessed on 3 January 2015.

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FIGURE 1 Research methods used in this study.



are presented in Figure 1. Documents analyzed for the study are listed in Table 1.

The Big Foot project, funded by the European Commission, tested an intergenerational learning approach to sustainable development in 3 rural mountain communities: Berkovitsa, Bulgaria (43.2333°N, 23.1167°E); Trikala, Greece (39.5500°N, 21.7667°E); and Gubbio, Italy (43.3500°N, 12.5667°E). The lead author participated in the project partner and stakeholder meetings, maintained the project website, informed the UNEP and Carpathian Convention stakeholders about the project, and compiled a Transferability Tool Kit (document 10) with detailed information about the project. In addition to participant observation of the project, semistructured interviews were held with project managers from Bulgaria, Italy, and Greece, and documents such as the project's *Participatory Mapping Guidelines* (document 11) and *Intergenerational Approach Handbook* (document 5), meeting reports (eg document 6), and project evaluations by stakeholders and local project managers (eg document 2) were analyzed.

Additional semistructured interviews were conducted with 9 experts and 12 protected area staff from the Carpathian region. During the study it became clear that most research partners were not aware of the potential to integrate intergenerational practice with protected area management. Thus, interactive interviews were conducted, involving collaborative communication, where rationalization of the discussed issues was a shared process between the author and the interview partners (Corbin and Morse 2003).

Interviewed experts included practitioners in nature protection and sustainable development in local, regional, and international contexts. Interviews with protected area staff included representatives of protected areas from each Carpathian country: Czech Republic (1), Hungary (1), Poland (3), Romania (1), Serbia (1), Slovak Republic (2), and Ukraine (3). Interview partners were selected based on recommendations from World Wide Fund for Nature–Danube Carpathian Programme staff and on availability. Interviews were recorded and

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TABLE 2 Potential contributions of the older and younger generations to protected area management.

Older generation[a)]	Younger generation[a)]
Traditional knowledge, knowledge gained from lived experience: traditional land use, local landscape, local flora and fauna, medical practices, cultural heritage, architectural styles, crafts, food preparation and conservation, folklore, legends	Openness to innovation; ability to adapt to changing rules and standards Openness to globalization
Historical knowledge	Networking skills
Familiarity with traditional lifestyles adapted to the natural environment	Knowledge of social media, information and communication technology, digital cameras, computers, and other technology
Professional knowledge and skills	Potential to become professionals in protected area management and sustainable development
Interpersonal and civic competences	Engagement in civil rights activism
Interest in sharing knowledge with the younger generation	Time and ability to learn; ability to use knowledge and share information interactively
Enthusiasm about contributing to local development	Engagement in new trends in environmental protection
Potential to volunteer regularly	Potential to volunteer on action days

[a)]The older generation is defined as people 60 years and older, and the younger generation as people 20 years and younger (Boström 2003).

transcribed, and the transcriptions were analyzed using content analysis (Mayring 2000).

Unless otherwise indicated, the challenges associated with protected area management were derived from IUCN guidelines (Dudley 2008) or the interviews. Proposed IP solutions to these challenges were formulated by the authors based on the research findings.

Intergenerational practice and protected area management challenges

In order to conceptualize the potential use of IP for protected area management, a list was compiled—based on documents, interviews, and project participation—of the perceived skills, knowledge, attitudes, and values of older and younger generations, which could be useful for protected area management and sustainable development in rural mountainous regions (Table 2). IP encourages the exchange of knowledge, skills, values, and paradigms between younger and older people.

Interviewed protected area managers, at first mostly surprised by the suggestion that IP could be relevant to protected area management, provided examples of existing initiatives or potential uses for IP in their respective protected areas. However, none of them exhibited an understanding of IP concepts, such as mutual learning beyond school educational programs. Interviewed experts were more familiar with IP and its potential for protected area management.

The identified protected area management challenges and potential IP solutions are summarized in Table 3.

Protection of biological and cultural diversity

Protection of biodiversity both within and outside of protected areas could be facilitated and promoted using IP, although IP alone is not sufficient for this purpose. For example, seniors can share knowledge of and appreciation for the natural environment and traditional land use practices that are beneficial for conservation, such as traditional farming, medicinal plant cultivation, and traditional architecture using local materials. At the same time, new sustainable practices could be developed or introduced by teaching the younger generation, which could help resolve conflicts between natural protection and cultural practices. Even strictly protected areas could benefit from IP among professional staff, researchers, or the population at the protected area periphery. In the Big Foot project, members of the older generation, both professional conservationists and nature lovers, explained the value of conservation to young people and taught them local legends inspired by the natural landscape. In Berkovitsa, younger participants' awareness of the dangers of deforestation was raised (Figure 2).

IP can also play a role in the restoration of natural and culturally defined ecosystems: older residents can share their knowledge of historical landscape conditions, such as during the Big Foot excursions into the protected areas in Bulgaria (document 10), and younger residents can acquire restoration skills. In the United States–based Wildlands Restoration Volunteers program, for instance, participants of all ages and skill levels work on ecosystem restoration projects (such as planting trees, controlling weeds, building fences, and restoring gullies and disturbed foothills), receiving training as needed (document 16).

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TABLE 3 Protected area management challenges and potential IP solutions. (Table continued on next page.)

Protected area management challenge	Potential IP solutions (source)[a]
Conserving biological and cultural diversity • Conflict between natural protection and cultural practices • Loss of cultural and spiritual values associated with nature • Inappropriate land use and other activities in buffer zones • Disappearance of traditional wilderness-based lifestyles and indigenous customs • Disappearance of traditional livestock breeds • Degradation of culturally defined ecosystems • Disappearance of traditional management approaches and other values that served to maintain associated species as part of a management plan	IP can facilitate: • Engagement of the local population in biodiversity protection inside and outside protected areas (IEX, IPM) • Teaching of sustainable traditional land management practices to the younger generation (IPM) • Introduction of innovative sustainable land uses to the older generation (BF) • Exchange and communication of cultural and spiritual values with an aim of site preservation and greater acceptance (BF, Doc 10) • Restoration of ecosystems (with older residents contributing knowledge of previous conditions and younger residents knowing or learning the techniques necessary for the restoration process) (Doc 16) • Environmental education and training for farmers (Doc 4)
Fulfilling important social and economic functions • Lack of use of natural resources for sustainable development • Disappearance of sustainable livelihoods • Insufficiently developed tourism and recreation • Lack of local sustainable development initiatives • Depopulation within the protected area perimeter	By combining traditional knowledge with new ideas, innovative approaches and products could be created (IEX, Doc 3, 9). IP can facilitate: • Adaptation of traditional knowledge to the current situation (BF) • Sustainable tourism development (IPM) • Creation of community natural spaces based on the local landscape and vegetation (Doc 16, BF, AC)
Overcoming lack of resources for management and monitoring	The IP approach opens new funding opportunities focused on social cohesion, active aging, education, and similar values, which could also support general management activities, for example, by providing volunteers (Doc 1, AC).
Overcoming lack of professional expertise and insufficient management • Lack of sufficient trained personnel • Local-level deficits in implementing sustainable management (Schliep and Stoll-Kleemann 2010) • Lack of new skills and tools to address the new challenges that emerge from planning, monitoring, and managing sustainable-use areas • Lack of systematic data collection and management (Knaus 2013)	IP can facilitate: • Training of younger professionals by older experienced professionals (Doc 7, 8, 12, 13, 15) • Introduction of new management approaches, including through advocacy, by younger trained protected area managers to their 3 older colleagues (Doc 14, AC) • Park ranger training for local residents (IPM, IEX) • Involvement of students in data collection as a part of IP education activities (AC) • Voluntary work by local communities in protected area management (IPM, Doc 16)
Involving the community and stakeholders at various levels • Lack of vertical integration of protected area institutions and national authorities, including funding and political support for local implementation (Schliep and Stoll-Kleemann 2010) • Difficulties embedding protected areas within society at a structural level (Vilsmaier 2010) • Difficult relationships between protected areas and the government • Lack of time and financial resources for participation • Lack of ownership and common responsibility for the region (Schliep and Stoll-Kleemann 2010)	IP can facilitate: • Enhanced communication among stakeholders, active participation, and capacity development (BF, IEX, Doc 1) • Links between protected area management and other community development issues and institutions (BF, IEX, Doc 1) • Involvement of adults by the younger generation and vice versa, including through volunteer programs (Doc 16, BF) • Community participation, for example through school programs in cooperation with protected areas, local seniors, and cultural organizations (BF, Doc 10, IPM, IEX) • Community cohesion and sense of ownership (BF, Doc 1)

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TABLE 3 Continued. (First part of Table 3 on previous page.)

Protected area management challenge	Potential IP solutions (source)[a]
Promoting education, research, and knowledge generation and management • Low interest in and availability of educational activities • Lack of scientific research and monitoring • Low interest in natural resources careers among local people (Hager et al 2007 in Dawson 2007) • Lack of awareness of the potential of conservation programs • Lack of knowledge and expertise • Lack of collaboration with local institutions on educational and research programs	IP can enhance education activities and strengthen their impact on community cohesion (AC, BF, Docs 4, 13, 14). Older professionals can promote research on and interest in conservation among younger people through cooperation of protected areas with universities (AC, Doc 13).
Increasing understanding and lowering conflicts in relation to protected areas • Low degree of acceptance by the local population • Conflicting expectations (Mannigel 2008 in Wallner and Wiesmann 2009) • Difficulty reconciling needs of farmers and hunters • Perception of conservationists as outsiders (Wallner and Wiesmann 2009)	IP can facilitate: • Teaching of conservation values by the older generation to the youth (BF, Doc 10) • Increased awareness and acceptance of protected areas among both younger and older people (AC) • Increased interest by young people in supporting conservation and training as conservationists (BF, IEX)

[a]Doc = document (numbers refer to the documents listed in Table 1); AC = authors' conclusion; BF = Big Foot case study; IEX = expert interview; IPM = interview with protected area manager.

Socioeconomic development

Protected areas often aim to support sustainable social and economic development in nearby communities, and IP can support this process, as for example in the regional development process in Bregenzerwald, Austria, which included an ongoing dialogue between younger and older residents (document 9).

IP can support tourism development by maintaining traditional cultural knowledge, practices, crafts, and recipes in rural communities, at the same time promoting them via new media. In the Romanian and Ukrainian Carpathians, young people are contributing innovative ideas to tourism development in cooperation with protected areas (such as bicycle rental). The young Bulgarian Big Foot participants were motivated to produce a new map and tourist guide for Berkovitsa after excursions led by older nature lovers. The Italian Big Foot community produced an electronic cookbook, including video recipes from elderly inhabitants, recorded by the younger generation (document 3).

Access to broader funding opportunities

Using an IP approach opens additional funding sources for protected areas and for conservation projects that emphasize social cohesion, active aging, education, and professional training of the local population (document 1). Such projects can include training of local volunteers of all ages to perform various management tasks, including those related to conservation. The IP approach can also facilitate involvement of protected areas as partners in IP projects that are not primarily focused on nature conservation but could complement it. Such new partnerships could render further benefits such as awareness raising, recruitment of new volunteers, and strengthened links to the local community.

Professional development

IP can support professional knowledge exchange in protected areas through its role in organizational learning: the knowledge and skills of older professionals can be preserved before they retire, while new visions and approaches can be introduced by younger, newly educated employees. An example is the Intergenerational Learning in Organizations project (document 12), which provided examples and guidelines for this activity.

Participation in IP within protected areas could generate interest among young people in pursuing conservation careers. Existing examples include training programs in which young people are taught the importance and practice of nature protection, as well as technical protected area management aspects such as the Habitat Intergenerational Program (document 14), the Outdoor Explorers Mentoring Program (document 8), and the Yosemite Leadership Program (document 13). In some cases, older participants benefit from the intergenerational exchange as well: the Buddy Experiment of the IUCN Intergenerational Partnership paired experienced members of the IUCN's Commission on Education and Communication with young counterparts for 5 months and concluded that this IP not only enhanced the professional skills of the younger participants but also provided a tool for learning and a reality check for senior professionals, as well as ideas and inspiration for both generations (document 7).

Vocational training can introduce values of conservation and sustainability to professionals whose

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FIGURE 2 Big Foot participants discovering their local natural and cultural heritage near Berkovitsa, Bulgaria. (Photo courtesy of Big Foot)



work affects protected areas, thus helping to decrease conflicts between conservation and land use. For example, training farmers could help prevent harmful grazing practices or the disappearance of traditional livestock breeds. IP can support this process. An example is the Farmers Education project in Greece, which used IP to train farmers to adopt new approaches to production and product promotion (document 4).

Awareness raising and participation

Raising awareness and strengthening local participation are considered ways of improving protected area management and enhancing acceptance of the protected area by the local population, but this depends both on the ability of protected area staff to encourage participation, and on the motivation of the people to become actively involved (Figure 3). IP can support not only this process but also exchanges between local people and migrants (or remigrating residents), which could enhance the relationship between the community and the protected area.

In all 3 countries, the Big Foot IP initiative enhanced communication within the communities and contributed to greater interest among both older and younger participants in engaging in community life (document 10). Activities in Bulgaria and Greece increased participants' awareness of and concern about local nature protection. In Italy, migrants participated in cooking courses using local ingredients.

Examples of several IP projects can be applied to the protected area context. Youth with Impact, a community participation program in Switzerland, supports inclusion

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FIGURE 3 A retired protected area manager in Greece leads a Big Foot school nature excursion. (Photo courtesy of Big Foot)



of youth in community development through an annual Youth with Impact Day, during which young people and adults plan projects (such as youth events and sports and entertainment facilities) and implement them together. Strategies Towards Active Citizenship involved various IPs promoting active citizenship among seniors in Europe, including senior education in various fields, storytelling for children, use of computers, and volunteering (document 1).

Strengthening the IP component of volunteering programs can enhance their value for protected areas by involving volunteers of different ages and from more institutions, enhancing training of volunteers, and providing other added social value. The IP project Fifty–Fifty, Junior and Senior Citizens discovering Social Europe through International Voluntary Service could serve as an example (document 1).

Involvement in IP can also foster cooperation between protected areas and other institutions, such as local nongovernmental organizations, development organizations, schools, retiree organizations, and cultural centers. Such cooperation could further enhance awareness and participation and facilitate further benefits for protected area management. For example, Big Foot activities in Greece prompted the local development agency to work with protected area staff.

Education, research, and intergenerational learning

Education is an important objective of protected area management, and cooperation with educational institutions can support its implementation. While IP is a natural component of education, more often it involves the older generation teaching the younger. Even in this case, a focus on IP can give students the experience of learning from adults other than teachers. For example, in Big Foot, elderly and retired local people were invited to the schools to share their knowledge and experiences, which gave students new perspectives on their local heritage. Several examples exist in which students learned conservation practices from older professionals, such as the Intergenerational Outdoor School Program and Intergenerational Landed Learning (document 14).

IP also implies that younger people can teach and influence their older counterparts (document 10). This approach could be used to encourage young people to introduce conservation values and practices to their

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communities, promote awareness in the local population, increase participation in protected area activities, and reduce conflicts in relation to protected areas.

IP can also be relevant for research by promoting interest in studying conservation among young people and thus bringing fresh insights into established practices (Table 3).

Supporting arguments from the literature

Lack of understanding of IP, its potential, and its wider impact on communities limits the recognition of this approach by policy-makers and practitioners. This challenge has been reflected in other studies (Springate et al 2008; Buffel et al 2014). Springate et al (2008) argued that IP is an effective way to promote policy and encourage community cooperation, but that more research is needed on the most effective and credible ways to use it.

Our findings on the usefulness of IP in several areas have been supported by other studies. Regarding participation, Buffel et al (2014) discussed the Shared Places and Shared Spaces program in Manchester, in which engagement in IP facilitated the involvement of older and younger people and collective community development action. IP could likewise promote involvement of younger and older local people in protected areas—for example, as volunteers, which could help address the lack of funds for protected area management. The publication *Competence Standards for Protected Area Jobs in South East Asia* (Appleton et al 2003) classified protected area management tasks and identified several that could be performed by community members without professional training. Penker et al (2014) proposed a typology of volunteer organizations engaged in land care specifying which of them could be used by protected areas. Research for the project Volunteer Management in European Parks (Thomson 2013) concluded that tasks performed by volunteers vary but are dominated by practical management, and suggested the need to strengthen links between protected area staff and local communities through volunteering-related communication. The study also demonstrated that volunteers represent a wide age spectrum, "from students to people … past retirement age" (Thomson 2013: 4) and that "engaging and maintaining the interest of younger people" was important (Thomson 2013: 6).

With respect to education, better awareness and acceptance of protected areas could be taught to the young and transferred by them to the older members of their households. The reciprocal nature of learning by both generations from each other was stressed by Buffel et al (2014). The notion that younger people can teach and influence older people has been employed in school projects promoting environmental awareness and practices: children learn new knowledge in class and share it with their families, and adults learn by helping children with homework. Examining a school recycling project in England, Maddox et al (2011) concluded that household recycling can be positively affected by intergenerational influence using a practical education model.

IP relevance to protected area research can be inferred from Vilsmaier (2010), who indicated its potential for establishing and strengthening the research platforms and scientific boards of protected areas, including stakeholders from different parts of society and research institutions. Citizen science, or "integrating public outreach and scientific data collection locally, regionally, and across large geographical scales" (Cooper et al 2007 in Devictor et al 2010), is applicable, in particular for local participation in protected area management. Devictor et al (2010: 354) concluded that citizen science's contribution to conservation biogeography is scientifically successful and can both be "highly valuable … and promote the reconnection between people and nature and … between people and science."

Some suggested examples are less directly applicable to protected areas than others. However, they show the applicability of IP to various management aspects and provide ideas for implementation. Considering and adapting new approaches could bring useful results. Existing examples from IP research and practical projects, even those not directly dealing with conservation, could provide guidance on the use of IP in the context of protected areas—such as success factors for IP projects (Springate et al 2008), or guidance on IP between younger and older professionals (Spannring 2008).

Recommendations

This article has proposed interactions between the fields of IP and protected area management, which so far have developed separately. The potential for incorporating IP into protected area management has not yet been fully explored; however, existing results suggest possible benefits for protected areas, such as addressing management challenges related to participation, training, and knowledge-related processes. Engaging in IP opens the possibility of embedding protected areas strongly into the community and could increase funding opportunities for development projects related to protected areas, including tourism development.

Incorporating IP into protected area management could be considered on several levels. At the international level, it could be included in framework documents, management guidelines, and training materials for protected area staff, such as the IUCN's capacity development program (Reynolds and Dudley 2013). IP-related tasks could be proposed for each protected area employee level.

At the regional level, it would be useful to include IP in the agenda of regional protected area networks, to

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promote more interactions between professionals in the fields of IP and protected areas, to promote funding mechanisms supporting IP in protected areas, such as within the EU funding programs "Financial Instrument for the Environment" (LIFE), "European Region Action Scheme for the Mobility of University Students" (ERASMUS+), "European Territorial Cooperation" (ETC), and "Links between the rural economy and development actions" (LEADER; original name in French: "Liaison Entre Actions de Développement de l'Économie Rurale").

Adjusting legal and organizational strategies at the national level can provide a supportive framework for developing new initiatives in protected areas. This is the scale at which innovative experiments can be conducted to create more experiences and generate knowledge about integrating IP in protected area management. While this approach has potential in all types of protected areas, Biosphere Reserves may be the most promising, due to their specific role as test beds for social innovation under the UNESCO Seville Strategy (UNESCO 1996).

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