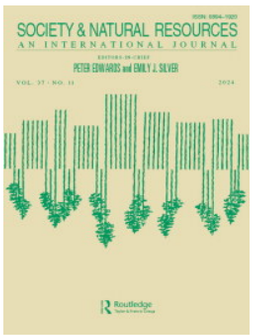

Routledge
Taylor & Francis Group

Society & Natural Resources
An International Journal

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/usnr20

A Systematic Review of Environmental Volunteer Motivations

Charlotte P. Sextus, Karen F. Hytten & Paul Perry

To cite this article: Charlotte P. Sextus, Karen F. Hytten & Paul Perry (2024) A Systematic Review of Environmental Volunteer Motivations, Society & Natural Resources, 37:11, 1591-1608, DOI: 10.1080/08941920.2024.2381202

To link to this article: https://doi.org/10.1080/08941920.2024.2381202

SOCIETY & NATURAL RESOURCES
2024, VOL. 37, NO. 11, 1591–1608
https://doi.org/10.1080/08941920.2024.2381202

Routledge
Taylor & Francis Group

A Systematic Review of Environmental Volunteer Motivations

Charlotte P. Sextus[a], Karen F. Hytten[a], and Paul Perry[b]

[a]School of Agriculture and Environment, Massey University, Palmerston North, New Zealand; [b]School of People, Environment and Planning, Massey University, Palmerston North, New Zealand

ABSTRACT

In many countries, volunteers make an important contribution to protecting and restoring natural ecosystems through participating in activities such as planting, weeding and species monitoring. However, many environmental groups have low recruitment and retention rates. It is therefore important to understand people's motivations to participate in environmental volunteering. In this context, this paper systematically reviews the limited literature on this topic. A thorough database search identified 44 relevant peer-reviewed journal articles. These papers identified a range of key factors motivating people to volunteer in conservation initiatives including, helping the environment, helping the community, learning, being in nature, and social factors. The literature also showed that there is variation in motivations between individuals, and that different motivations can develop over time. The literature also provides insights into barriers to volunteering and how to recruit and retain environmental volunteers, which is a major factor in the success of conservation initiatives.

ARTICLE HISTORY
Received 23 September 2023
Accepted 17 June 2024

KEYWORDS
Community-based conservation; environmental volunteering; volunteer commitment; volunteering barriers; volunteer motivation; volunteer satisfaction

Introduction

Environmental volunteering involves the participation of the community in a range of natural resource management practices that aim to have a positive impact on the co-existence of humans and the environment (Berkes 2004; Ruiz-Mallén et al. 2015). Environmental volunteering encompasses participation in a wide range of conservation initiatives from small, local, self-managed initiatives such as tree planting and pest control to co-management of protected areas and national parks (Dudley, Higgins-Zogib, and Mansourian 2009; Ruiz-Mallén et al. 2015). These different initiatives are subject to varying degrees of government involvement, have wide ranging aims and objectives, and can be supported by an array of incentives to encourage local support (Ruiz-Mallén et al. 2015; Ruiz-Mallén and Corbera 2013; Dudley, Higgins-Zogib, and Mansourian 2009). The number of environmental groups that rely on volunteers is growing around the world, with governments and non-government organizations increasing their engagement with

CONTACT Charlotte P. Sextus charlotte.przybylski@gmail.com School of Agriculture and Environment, Massey University, Palmerston North, New Zealand.

Supplemental data for this article can be accessed online at https://doi.org/10.1080/08941920.2024.2381202.

volunteers to improve their ability to manage natural resources and protect threatened species (Conrad and Hilchey 2011; Peters, Hamilton, and Eames 2015; Higgins and Shackleton 2015; Clary et al. 1998). The increasing need for environmental volunteers is shaped by a number of factors including growing public awareness of environmental issues, increasing pressure on local environments, and an increasing recognition of the need to conserve natural environments (Higgins and Shackleton 2015; Peters, Hamilton, and Eames 2015; Bruyere and Rappe 2007). The success of local conservation initiatives is often dependent on volunteers. It is therefore imperative that project managers ensure that their volunteers are motivated and committed to the projects they are involved in. To achieve this, project managers need to understand volunteer motivations (Tulloch et al. 2013; McAteer, Flannery, and Murtagh 2021).

Understanding volunteer motivations is critical for effective volunteer recruitment (attracting new volunteers), retention (the ongoing participation of volunteers over time) and commitment (the extent to which volunteers are dedicated to contributing to achieving their group's goals). Previous studies have found that environmental volunteers have a range of different motivations broadly aligning with the six functions in Clary et al. (1998) Volunteer Functions Inventory namely, individuals' values, the desire for increased understanding and knowledge, social connections, career advancement, self-esteem and personal development (Clary et al. 1998). Offering volunteers' the opportunity to participate in a variety of tasks that match with common motivations, along with substantial recognition is thought to increase volunteer retention and commitment (Ding and Schuett 2020; Takase, Hadi, and Furuya 2019; Domroese and Johnson 2017).

Research on environmental volunteer motivations has increased in the past two decades. Previous studies have empirically tested and classified different motivations into an environmental context. For example, Ryan, Kaplan, and Grese (2001) used a modified version Clary et al. (1998) Volunteer Function Inventory to characterize five broad motivations: helping the environment (seeing an improvement or helping to restore the environment), learning (nature observation and learning new things about the environment), project organization (being part of a well-organized project, with a good leader and having a sense of being needed), social (seeing familiar faces, socializing and having fun with others) and reflection (having a moment to reflect and work at their own pace, doing something physical and having peace of mind). Large scale surveys among environmental volunteers, in the United States, United Kingdom and Australia, have shown that volunteers can have multiple reasons for participating and that motivations vary by socio-demographic attributes, the type of participant involvement and the extent of participant involvement (Frensley et al. 2017; Asah and Blahna 2013; Newton, Becker, and Bell 2014; Larson et al. 2020; Turnbull et al. 2020; Schuett et al. 2014; Pagès, Fischer, and van der Wal 2018; Hvenegaard and Perkins 2019; McDougle et al. 2015). Key papers also note that motivations can evolve and change over time, with helping the environment and social factors often identified as initial motivations and personal experiences, and being part of a community, along with a well-organized project being key motivations for longer term committed volunteers (Frensley et al. 2017; Larson et al. 2020; Schild 2018; Pagès, Fischer, and van der Wal 2018; Hvenegaard and Perkins 2019; Bramston, Pretty, and Zammit 2011).

Other review papers have focused on specific aspects of environmental volunteering with some studies reviewing the literature relating to environmental volunteering by

particular age groups. For example, Chen et al. (2022) reviewed literature specifically relating to older environmental volunteers, while Katz and Sasson (2019) reviewed literature relating to adolescent environmental volunteers. Seymour, King, and Antonaci (2020, 2018) investigated the link between environmental volunteering and pro-environmental behaviors' and characteristics that foster social-ecological resilience while Robinson et al. (2021) reviewed the implementation of functional features of citizen science tools to help retain volunteers. However, there have been no review papers specifically exploring the motivations of environmental volunteers, barriers to volunteering and volunteer commitment and satisfaction. As such, our review differs to previous reviews as it examines all the peer-reviewed studies specifically investigating environmental volunteering motivations across countries, age ranges and demographics, to provide a clear summary of environmental volunteer motivations. We also explore barriers to volunteering and volunteer satisfaction and commitment.

The aim of this paper is to identify and discuss the key motivations for volunteers participating in local environmental initiatives, explore factors that help keep volunteers engaged long-term, and identify gaps in the literature relating to environmental volunteering motivation and satisfaction.

Methods

Systematic literature reviews provide a structured and rigorous approach for evaluating the literature on a specific topic (Petticrew and Roberts 2006). For this review we followed the 12-step approach developed by Kable, Pich, and Maslin-Prothero (2012) to plan and carry out our review. Initially, two scholarly databases, Scopus and Web of Science, were searched in October 2022 for the purpose of locating peer-reviewed research presenting original data about what motivates environmental volunteers to participate in environmental volunteering. Scopus and Web of Science were selected as the most comprehensive scholarly databases available to us. We also carried out an additional Google Scholar key word search in November 2022 to identify any additional relevant papers not already captured by the initial search.

The primary search terms used to search the databases were "volunteer motivations" and "environmental volunteering." These searches were then refined by the addition of other key search terms documented in Table 1. The search was conducted sequentially using the search engines and search terms as shown in Table 1. Each of the articles retrieved was assessed for relevance by reading the abstract and using the inclusion and exclusion criteria to exclude those papers that were not relevant to this review. The search was limited to English language peer-reviewed journal articles presenting original data on environmental volunteer motivations, published from 2001 to 2022. Papers that were not in English, were not peer-reviewed, did not include original data or focused specifically on online volunteering, tourism volunteering, other non-environmental volunteering were excluded.

The first author undertook the screening process consulting with the coauthors about any papers that presented a challenge. For these papers all the authors read the paper to decide whether it fulfilled the inclusion criteria. Articles that met the inclusion criteria were documented in Table 1, with any duplicate articles deleted during this process. Each article was given an identification number to make it clear which

Table 1. Results of database searches.

Database	Search terms	Total papers	Retrieved papers	Identification number
Scopus	'volunteer* 'motivation*'	370		
	AND conservation	32	17	1–17
	AND steward*	11	5	18–22
	AND nature	25	3	23–25
	AND community	109	1	26
	AND environment*	53	1	27
	'environment* volunteer*'	99		
	AND factor* AND involve*	5	3	28–30
	AND community	31	1	31
	AND motivation*	29	4	32–35
Web of Science	'volunteer* motivation*'	336		
	AND conservation	29	0	
	AND steward*	9	0	
	AND nature	20	0	
	AND community	120	0	
	AND environment*	38	0	
	'environment* volunteer*'	86		
	AND factor* AND involve*	7	0	
	AND community	34	0	
	AND motivation*	33	1	36
Google Scholar	"environmental volunteer motivations"	39	8	37–44
		TOTAL	44	

search terms were found in each article, which are noted in Table 1 and Appendix 1. Each article was also saved using the reference management software EndNote including the search term and engine that located each article. In total, 44 papers were included in the review as summarized in Table 1. The full bibliographic details for each paper are provided in Appendix 1.

A limitation of this review is that it does not include grey literature, which undoubtedly provides valuable insights into many aspects of environmental volunteering. However, most of the grey literature we found through web-searches reflected on and discussed motivations rather than presenting original data. When we did find original research within the grey literature it had often also been published in a journal article already captured by our scholarly database searches (e.g. O'Brien, Townsend, and Ebden 2008; O'Brien, Townsend, and Ebden 2010). Nonetheless, a systematic review of grey literature would be a fruitful avenue for future research.

Key Themes within the Literature

Out of the 44 papers, 22 were based on research conducted in the United States, with a further seven studies from Australia (Bramston, Pretty, and Zammit 2011; Gulliver, Fielding, and Louis 2022; Measham and Barnett 2008; Newton, Becker, and Bell 2014; Thomas et al. 2021; Tulloch et al. 2013; Turnbull et al. 2020) and six from the United Kingdom (Dunkley 2019; McAteer, Flannery, and Murtagh 2021; O'Brien, Townsend, and Ebden 2010; Pagès, Fischer, and van der Wal 2018; Sloane and Pröbstl-Haider 2019). There were also five papers from studies undertaken in other European countries (Ganzevoort and van den Born 2020; Liarakou, Kostelou, and Gavrilakis 2011; Madsen et al. 2021), and two from South Africa (Higgins and Shackleton 2015; Wright et al. 2015). One study was from New Zealand (Heimann et al. 2022) and one from

Japan (Takase, Hadi, and Furuya 2019), with one paper describing an international study (Gratzer and Brodschneider 2021). There were also three studies that compared motivations of volunteers between two countries. Sloane and Pröbstl-Haider (2019) compared motivations in Austria and Great Britain, McDougle et al. (2015) compared motivations in the United States and South Korea, and Hvenegaard and Perkins (2019) compared motivations in Canada and the United States.

A range of different methods were used across the 44 studies. Twenty-seven studies carried out surveys, predominantly online surveys. Four studies used interviews and 11 studies employed mixed methods, using a combination of surveys, interviews and focus groups. The two remaining studies evaluated specific environmental volunteering groups: Frensley et al. (2017) used self-guided online training videos and in-person meetings to help improve Virginia Master Naturalist volunteers' experiences. While Pillemer et al. (2017) described the Retirees in Service of the Environment (RISE) program and used interviews, surveys and a census workshop to investigate the benefits to the community and effects volunteering has on participants.

The studies were undertaken at a range of different scales from small local studies investigating one or two environmental volunteering groups in detail to large scale studies that elicited participation from volunteers across a wide geographical area, sometimes spanning multiple countries.

The main focus of most of the papers was to better understand environmental volunteers' motivations to participate in environmental volunteering, with 36 of the papers also looking at the characteristics of environmental volunteers. Some of the papers also explored the benefits and barriers surrounding environmental volunteering, commitment and satisfaction of volunteers, the relationship between humans and nature, and recruitment and retention of volunteers.

Volunteers' Key Motivations

Studies on environmental volunteering found that volunteers are motivated by a wide range of factors. For example, Ryan, Kaplan, and Grese (2001) found five key motivations for participation in environmental volunteering: helping the environment, learning, project management, social factors and reflection. A series of studies that have been carried out since then found similar key motivations (Akin et al. 2013; Asah and Blahna 2013; Bramston, Pretty, and Zammit 2011; Bruyere and Rappe 2007; Ding and Schuett 2020; Ganzevoort and van den Born 2020; Hvenegaard and Perkins 2019; Schuett et al. 2014). Some have also identified additional motivations including helping the community (Akin et al. 2013; Asah and Blahna 2013; Ganzevoort and van den Born 2020), fitness (Asah and Blahna 2013; Hvenegaard and Perkins 2019; Schuett et al. 2014), being outdoors (Bruyere and Rappe 2007; Ganzevoort and van den Born 2020; Hvenegaard and Perkins 2019; Larson et al. 2020), personal values and experiences (Akin et al. 2013; Asah and Blahna 2013; Bruyere and Rappe 2007; Ding and Schuett 2020; Hvenegaard and Perkins 2019; Larson et al. 2020; Madsen et al. 2021), career advancement (Bruyere and Rappe 2007; Ding and Schuett 2020), educating others (Hvenegaard and Perkins 2019; Pagès, Fischer, and van der Wal 2018; Schuett et al. 2014), attachment to place or to an organization/project (Madsen et al. 2021; Krasny et al. 2014; Dunkley 2019), connection to nature (Ganzevoort and van den

Born 2020; Pagès, Fischer, and van der Wal 2018; Madsen et al. 2021; Krasny et al. 2014; Ganzevoort et al. 2017) and contributing to science (Walker, Stephens, and Overton 2012).

Out of the 44 papers retrieved for this review 20 had results that identified the top initial motivations for the volunteers interviewed or surveyed in their study. When placed into broad groupings the most common motivation for environmental volunteering was helping the environment, following by learning as illustrated in Figure 1. It is also interesting to note that learning-based motivations were most often ranked second by volunteers. There is also a wide range of motivations ranked third with personal values most often ranked third but never ranked first or second (Table 2).

As illustrated in Figure 1 helping the environment is often identified as the most influential motivation for environmental volunteering (Ryan, Kaplan, and Grese 2001; Gratzer and Brodschneider 2021; Alender 2016; Bruyere and Rappe 2007; Akin et al. 2013; Pagès, Fischer, and van der Wal 2018; Heimann et al. 2022; Thomas et al. 2021). This motivation refers to people who volunteer to do something that improves the natural environment (Bruyere and Rappe 2007). In the literature there is a range of reasons for this type of motivation which include an underlying concern for the environment, the desire to address environmental issues, wanting to make a difference and a need to restore a local natural environment (Akin et al. 2013; Alender 2016; Bruyere and Rappe 2007; Dunkley 2019; Thomas et al. 2021). Volunteers with this motivation also often display pro-environmental behaviors (Ryan, Kaplan, and Grese 2001). Volunteering for restoration projects is unique compared to other types of volunteering as it allows the volunteers to clearly see their progress, and the improvements in the natural environment (such as, growth of trees they have planted or the removal of weeds they have cleared) (Ryan, Kaplan, and Grese 2001; Bruyere and Rappe 2007). Therefore, the tangibility of environmental volunteering may also act as an important motivation to volunteering, making volunteers feel like they are making a significant positive impact (Gratzer and Brodschneider 2021; Alender 2016; Ryan,

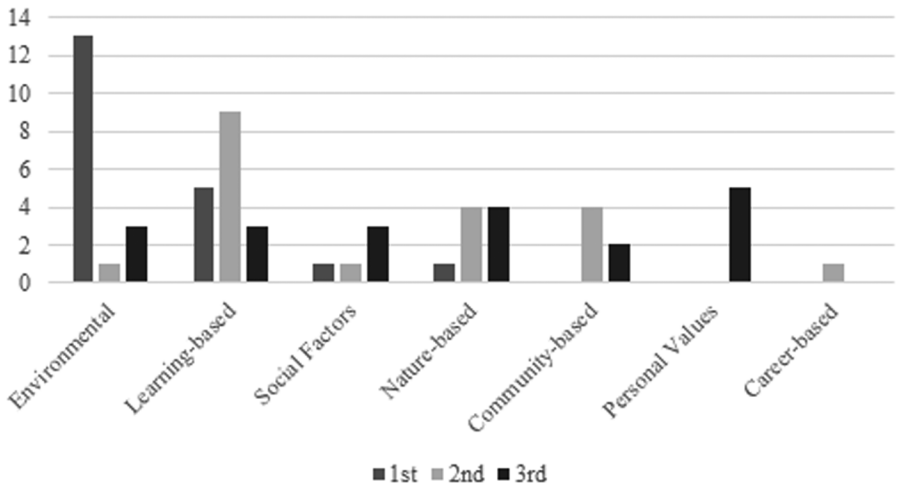

Figure 1. Graph showing the range of environmental volunteer motivations ranked first, second and third over 20 papers.

Table 2. Examples of statements used to explain key motivations illustrated in Figure 1.

Key motivations	Examples of statements used in papers
Environmental	To support conservation of a natural habitat
	I want to help or enhance the environment
	To restore some aspect of the environment
	Help preserve natural areas for future generations
Learning-based	To learn about plants and animals
	Volunteering lets me learn things through direct, hands-on experience
	I want to contribute to scientific knowledge
	Acquisition of environmental knowledge
Social Factors	To meet new people
	The organization's social arrangements are important to me
Nature-based	I want to get outside
	Being connected to nature
	To see wildlife
Community-based	To give something back to my community
	To show my community that I care
Personal Values	To do something worthwhile
	Enrich my future recreation experiences
	Volunteering allows me to live in a way that represents my values
	Volunteering makes me feel needed
Career-based	Explore possible career options
	Experience will look good on resume
	To learn new job skills

Kaplan, and Grese 2001). Akin et al. (2013) and Bruyere and Rappe (2007) suggest managers can encourage volunteers with helping the environment motivations by being intentional in showing volunteers how their effort contributes to conservation initiatives and setting goals and tasks around environmental outcomes.

Learning was also often found to be a key motivation for environmental volunteers (Domroese and Johnson 2017; Guiney and Oberhauser 2009; Van Den Berg, Dann, and Dirkx 2009; Liarakou, Kostelou, and Gavrilakis 2011; Johnson et al. 2018; Bruyere and Rappe 2007; Gratzer and Brodschneider 2021; Pagès, Fischer, and van der Wal 2018; West, Dyke, and Pateman 2021). The literature suggests that people who are motivated by learning tend to use volunteering as an opportunity to learn new things about the environment (Ryan, Kaplan, and Grese 2001; Van Den Berg, Dann, and Dirkx 2009), and therefore tend to have an interest in the natural world, a desire to contribute to scientific knowledge and a desire to learn more about natural ecosystems, plants, animals and environmental issues (Bruyere and Rappe 2007; Ryan, Kaplan, and Grese 2001; Guiney and Oberhauser 2009; Schild 2018). Some studies show that environmental restoration projects can encourage volunteers with the learning motivation by teaching people about the local environment, providing learning opportunities that relate to the local environment, and explaining the importance of their volunteering efforts (Liarakou, Kostelou, and Gavrilakis 2011; Ryan, Kaplan, and Grese 2001; Dunkley 2019). A study by Ganzevoort et al. (2017) found that nearly half of their volunteers were interested in more information on relevant research and policy. By improving access to relevant information volunteers would be more aware of the environmental issues their work improves and therefore more motivated to continue volunteering (Ganzevoort et al. 2017). Long-term volunteers may be motivated by the continued learning that they experience from their volunteering, and the ability to use that knowledge in other contexts (Ryan, Kaplan, and Grese 2001; Liarakou, Kostelou, and Gavrilakis 2011; Van Den Berg, Dann, and Dirkx 2009) such as,

informing their tertiary studies, advancing their career, or sharing their knowledge with others in professional or personal roles. It is important to note that although, helping the environment is most frequently the top ranked motivation, some studies found learning to be the highest ranked motivation (Domroese and Johnson 2017; Guiney and Oberhauser 2009; Liarakou, Kostelou, and Gavrilakis 2011). The environmental initiatives studied in these papers had a strong educational focus or citizen science dimension which may explain the higher proportion of volunteers motivated by a desire to learn.

Social factors are another motivation that is often ranked highly within the literature (Asah and Blahna 2012, 2013; Asah, Lenentine, and Blahna 2014; Pagès, Fischer, and van der Wal 2018; Takase, Hadi, and Furuya 2019; Ryan, Kaplan, and Grese 2001; O'Brien, Townsend, and Ebden 2010; Van Den Berg, Dann, and Dirkx 2009; Turnbull et al. 2020). Social factors encompass a range of motivations of people who volunteer to socialize with others, including volunteering to meet new people, make friends, work with others with similar interests and attend social gatherings after volunteering events (O'Brien, Townsend, and Ebden 2010; Ryan, Kaplan, and Grese 2001). Having friends that already participate in environmental volunteering was also found to influence people to volunteer, as it allows for quality time with friends (Ryan, Kaplan, and Grese 2001; Madsen et al. 2021). Bruyere and Rappe (2007) argue that interacting with other volunteers can allow for the sharing of ideas and values, and the ability to do something positive with others. Social interaction is a common motivation for environmental volunteers, therefore social networks that allow volunteers to share information and experience should be promoted (Wright et al. 2015). It is important to note that not all environmental volunteering has a social dimension. For example, Domroese and Johnson (2017) studied volunteers involved in bee watching which often takes place in participant's back gardens. Unsurprisingly, the volunteers they surveyed ranked socializing as the lowest motivation to participate.

Another motivation identified within the literature concerns volunteers having a connection to nature (Ganzevoort and van den Born 2020; Guiney and Oberhauser 2009; Hvenegaard and Perkins 2019; Pagès, Fischer, and van der Wal 2018; Ganzevoort et al. 2017). Ganzevoort and van den Born (2020) and Ganzevoort et al. (2017) found that their volunteers rated being connected to nature as the top motivation to participate, and Guiney and Oberhauser (2009) found that their volunteers ranked nature-related motivations higher than social or career related motivations. These three studies also stated that a connection to nature contributed to the desire of volunteers to help the environment, further encouraging participation in environmental volunteering (Ganzevoort and van den Born 2020; Guiney and Oberhauser 2009). Therefore, some authors argue that organizations should consider offering experiences that increase connectedness to nature, and portray their own connection and love for nature when interacting with volunteers (Hvenegaard and Perkins 2019; Pagès, Fischer, and van der Wal 2018; Krasny et al. 2014; Ganzevoort et al. 2017). Pages, Fischer, and van der Wal (2018) state that an interplay of social factors and nature experiences is thought to lead to an increase in connectedness to nature, therefore leading to an increase in concern and an amplified desire to help the environment.

Another motivation identified within the literature is helping the local community (Ohmer et al. 2009; Alender 2016; Asah and Blahna 2013; Turnbull et al. 2020). This

motivation consists of two aspects. The first is that people are motivated to volunteer to protect and enhance local areas that they use, to enrich future use or recreation (Bruyere and Rappe 2007). The other aspect of this motivation is that people volunteer to help others in the local community or enhance a local area to benefit others (Ohmer et al. 2009; Alender 2016). Volunteering in local areas can encourage relationships between neighbors, promote self-efficacy and promote new skills and abilities within its volunteers (Ohmer et al. 2009).

Project management or project organization is regarded in the literature as a key to retaining volunteers (Ryan, Kaplan, and Grese 2001; Ding and Schuett 2020; Pagès, Fischer, and van der Wal 2018). Most volunteers want to be part of a project that is well run so they feel as if their time is well used. A well-run project will also get the most out of their volunteers' time. Volunteers that are motivated by the project organization will want to be part of a well-organized project, have a clear idea of what is expected of them and have a good leader to follow (Bruyere and Rappe 2007).

Another motivation that was identified by a few papers, was the opportunity to "escape," get exercise or experience other health benefits (O'Brien, Townsend, and Ebden 2010; Hvenegaard and Perkins 2019; Pillemer et al. 2017; Asah and Blahna 2013). A wide body of literature documents the health benefits of environmental volunteering. There is extensive evidence that spending time in natural environments has physical and mental health benefits including contributing to reducing blood pressure and stress levels (Brymer, Cuddihy, and Sharma-Brymer 2010; Mitchell and Popham 2008; Russell et al. 2013; Zuo, Wheeler, and Edwards 2016). In addition to the health benefits associated with being in a natural environment, environmental volunteering also offers health and wellbeing benefits associated with socializing with others, and feeling a sense of connection, sense of purpose and sense of achievement (Raihania and Walker 2007; The Conservation Volunteers (TCV), 2021; Tuao Aotearoa 2023). Interestingly, Hvenegaard and Perkins (2019) found while 30% of the bellbird trail mangers they surveyed across the United States and Canada identified exercise as a benefit of volunteering, only 1% indicated that it was a motivation for them to volunteer (with most motivated by a desire to contribute to conservation and/or to "experience nature").

Personal values and self-esteem were identified by fifteen studies as important motivations for environmental volunteers, with varying amounts of discussion (Ding and Schuett 2020; Hvenegaard and Perkins 2019; Johnson et al. 2018; Larson et al. 2020; Sloane and Pröbstl-Haider 2019; Van Den Berg, Dann, and Dirkx 2009; Akin et al. 2013; Asah and Blahna 2012). Bruyere and Rappe (2007) found that some people are motivated by the ability to be able to express their personal values and feel like they are spending time doing something positive and worthwhile. Environmental volunteering can also lead to a sense of pride and self-worth, which can lead to a desire to continue volunteering.

Career oriented volunteers are often motivated to participate in environmental volunteering by the opportunity to gain work-experience or experience a range of possible career paths (Asah and Blahna 2013; Ding and Schuett 2020; Sloane and Pröbstl-Haider 2019). Perhaps unsurprisingly this motivation is often more important among younger volunteers, who are looking to begin or advance their career (Bruyere and Rappe 2007; Gratzer and Brodschneider 2021). A study by

Alender (2016) shows that career orientation decreases in significance with increasing age and is a motivation of low importance when the entire population is considered, but of high importance to the younger volunteering population. It is important to note that individuals who are motivated by career-based factors are often short-term volunteers who are relatively independent of satisfaction factors (Newton, Becker, and Bell 2014).

Variation in Motivations between Individuals

Many studies have found that motivations vary among volunteers (Frensley et al. 2017; Asah and Blahna 2013; Newton, Becker, and Bell 2014; Larson et al. 2020; Turnbull et al. 2020; Schuett et al. 2014; Pagès, Fischer, and van der Wal 2018; Hvenegaard and Perkins 2019; McDougle et al. 2015; Ganzevoort and van den Born 2020) and contexts (Asah and Blahna 2013; Bramston, Pretty, and Zammit 2011; McDougle et al. 2015). Motivations are complex and tend to be influenced by age (Ganzevoort and van den Born 2020; Hvenegaard and Perkins 2019), demographics (Schuett et al. 2014; Hvenegaard and Perkins 2019; McDougle et al. 2015), income (Frensley et al. 2017), education (Ganzevoort and van den Born 2020; Hvenegaard and Perkins 2019), employment status (Madsen et al. 2021) and prior volunteering experience (Frensley et al. 2017; Woosnam et al. 2019; Thomas et al. 2021).

Some studies state that volunteering increases with age up to 60 years old and then decreases (Madsen et al. 2021; Patrick, Henderson-Wilson, and Ebden 2021). There can be a difference in motivations between young and old volunteers. Younger volunteers are typically more interested in learning new skills, career development and networking, and they tend to be more motivated by specific tasks instead of a connection to an organizations or place (Woosnam et al. 2019; Larson et al. 2020; Alender 2016). Older volunteers (aged over 60), on the other hand, tend to have more altruistic motivations such as advocacy, and sharing the knowledge and skills they acquire, along with socializing with others (Larson et al. 2020). Ganzevoort and van den Born (2020) also found that connection to nature was typically ranked higher by older volunteers, whereas younger volunteers tended to be more interested in learning and wildlife encounters.

Several papers state that level of education is a significant predictor of participating in environmental volunteering (Measham and Barnett 2008; Madsen et al. 2021; Heimann et al. 2022). Madsen et al. (2021) states that people that are well educated, wealthier and healthier tend to be more likely to participate in environmental volunteering, as they tend to be more aware of environmental issues and have larger social networks. In this context some studies found more highly educated people to be more likely to participate in environmental volunteering and more likely to be encouraged to volunteer (Heimann et al. 2022; Madsen et al. 2021).

Bramston, Pretty, and Zammit (2011) argue that the motivations of environmental volunteers differ to that of general volunteers, with environmental volunteers often specifying learning and visible progress as motivations to continue volunteering. However, Hvenegaard and Perkins (2019) and Schild (2018) argue that these and other motivations of environmental volunteers are shared by those volunteering in

other community initiatives. In a review of volunteering generally Chacón et al. (2017) found the top motivation for volunteering across a range of groups, including environmental groups, was "value" (referring to the expression of values related to altruistic and humanitarian concerns), and it did not differ across groups. However, there was variation in volunteer motivation between groups amongst less important motivations, such as "Career" (motivation to enhance knowledge in related to professional and academic development) and "enhancement" (motivations centered on self-knowledge, and self-development) (Clary et al. 1998; Chacón et al. 2017). It is also important to consider unique cultural contexts, characteristics and values that can play an important role in shaping individuals' decision making (Raihania and Walker 2007). In this context, it is important to understand and consider the full range of potential motivations influencing individuals decision to participate in environmental volunteering, as individual volunteers have different motivations, and may engage in similar activities for different reasons (Frensley et al. 2017; Bramston, Pretty, and Zammit 2011; Domroese and Johnson 2017). For example, two individuals may volunteer to plant a section of native bush. However, one individual may volunteer to simply be outside, whereas the other may be want to increase the number native plants in the area to attract more native wildlife. As such, promoting a variety of motivations can encourage more volunteers, and matching tasks with motivations can further encourage volunteers to participate (Ganzevoort and van den Born 2020).

Changes in Motivations Over Time

Seven studies described finding evidence that motivations can change and/or develop over time (Bramston, Pretty, and Zammit 2011; Frensley et al. 2017; Hvenegaard and Perkins 2019; Larson et al. 2020; Pagès, Fischer, and van der Wal 2018; Schild 2018; Thomas et al. 2021). Initial motivations, which attract volunteers, can become less important, or even irrelevant as a volunteer becomes more committed to environmental volunteering (Bramston, Pretty, and Zammit 2011; Larson et al. 2020). Helping the environment, and social factors tend to be stated as key motivations initially (Pagès, Fischer, and van der Wal 2018; Schild 2018), whereas long term volunteers are more likely to be motivated by personal experiences, being part of a community, and socializing (Asah and Blahna 2013; Frensley et al. 2017; Pagès, Fischer, and van der Wal 2018; Schild 2018). Schild (2018) states the organizational management can also impact long-term commitment, with well-run projects more likely to have longer-term committed volunteers. Pagès, Fischer, and van der Wal (2018) also points out that attachment to a place or group is an important motivating factor for long term volunteers. However, studies by Sloane and Pröbstl-Haider (2019) and Bruyere and Rappe (2007) found very minimal change in volunteer motivations over time.

To account for the change and range of motivations it is important that environmental organizations offer a variety of opportunities and tasks at different commitment levels (Asah and Blahna 2013). An increase in social, personal and community aspects have also been seen to help to retain volunteers as it builds a network of relationships and community (Asah and Blahna 2013; Hvenegaard and Perkins 2019).

Barriers to Volunteering

The literature suggests that volunteer-dependent organizations often struggle to retain volunteers and have high volunteer turnover rates (Asah and Blahna 2013; Bushway et al. 2011; Ding and Schuett 2020; Higgins and Shackleton 2015). Key barriers to volunteering identified in the literature include a lack of information or awareness about opportunities to volunteer (Hobbs and White 2012; Hoye et al. 2020), time constraints due to work, study and family commitments (Frensley et al. 2017; Heimann et al. 2022; Higgins and Shackleton 2015), the distance volunteers need to travel to volunteering sites and the time it takes to get there (Madsen et al. 2021; Thomas et al. 2021), perceived confidence and capability to participate (Hobbs and White 2012), fear of committing to volunteering on an ongoing basis (Hoye et al. 2020); and lack of resources, including limited funding and technical support (Frensley et al. 2017; Hvenegaard and Perkins 2019). The need to earn an income was found to be a leading barrier among middle aged individuals (Bushway et al. 2011) while health issues, particularly limited mobility, was identified as a key barrier for volunteers aged over 60 (Hobbs and White 2012; Hvenegaard and Perkins 2019; Pillemer et al. 2017).

Having a clear understanding of potential barriers to volunteering would allow environmental groups to be able to recruit new volunteers and reduce turnover rates, by working to alleviate key barriers. For example, time constraints have been stated in a few studies as not only a barrier to begin volunteering but also as a reason to volunteer less frequently or stop volunteering altogether (Frensley et al. 2017; Higgins and Shackleton 2015; Hvenegaard and Perkins 2019). To help alleviate this barrier environmental group leaders could provide clear time frames and offer volunteering opportunities that are at different times, and for variety of durations to cater for participants with different availability (Tuao Aotearoa 2023). Hoye et al. (2020) also suggest it is important for environmental groups to raise awareness and understanding about the need for volunteers, the important contribution volunteers make and the variety of opportunities to participate, using messaging designed to target new audiences in different ways (rather than relying on the same approaches that attracted existing volunteers).

Volunteer burnout is also identified as a barrier to environmental volunteering, as it leads to the loss of key volunteers, such as leaders and other committed individuals. Key factors that have been identified as contributing to volunteer burnout are volunteers feeling overwhelmed, being overworked, having no suitable role, and not being supported by others. Inadequate training and poor organizational management can also lead to frustration and an increase in loss of volunteers (Frensley et al. 2017; Ganzevoort and van den Born 2020; Schild 2018; Takase, Hadi, and Furuya 2019). Therefore, it is essential that managers of environmental initiatives are aware of key barriers and reasons behind volunteer burnout, so that solutions can be incorporated into initial planning stages to increase volunteer participation.

Volunteer Commitment and Satisfaction

Volunteer satisfaction was identified by 18 of the papers as having a positive impact on the commitment of volunteers and is seen to be driven by the ability of an organization to fulfill volunteer motivations. Therefore, if volunteer motivations are being

met it is more likely that volunteers will continue to participate and become more committed to future volunteering (Ding and Schuett 2020; Domroese and Johnson 2017; Takase, Hadi, and Furuya 2019). A better understanding of motivations could therefore help to promote committed, long-term volunteers (Domroese and Johnson 2017). Individuals over 60 years of age are also more likely to commit to volunteering compared to younger volunteers (Madsen et al. 2021), so targeting the retired population could lead to more long-term volunteers.

Some studies have shown that volunteer motivations should be taken into account in the initial phases of a project, so that the project design and goals can incorporate a range of activities to appeal to a variety of typical volunteer motivations (Ding and Schuett 2020; Domroese and Johnson 2017; Frensley et al. 2017; Hvenegaard and Perkins 2019). The range of activities should also take into account a variety of opportunities for different commitment levels, as long-term volunteers may want a more management based role compared to new volunteers (Hvenegaard and Perkins 2019; McAteer, Flannery, and Murtagh 2021). The matching of activities to volunteer motivations may increase volunteer recruitment, satisfaction and retention (Domroese and Johnson 2017; Frensley et al. 2017; Hvenegaard and Perkins 2019; McAteer, Flannery, and Murtagh 2021).

The literature highlights a series of factors that may increase volunteer satisfaction leading to the increased success of volunteer projects. The main factors discussed are effective project management (Ding and Schuett 2020; Gulliver, Fielding, and Louis 2022; Hvenegaard and Perkins 2019; Newton, Becker, and Bell 2014), ongoing education and training (Frensley et al. 2017; Gulliver, Fielding, and Louis 2022; Hvenegaard and Perkins 2019; Newton, Becker, and Bell 2014), providing clear goals and sharing information freely (Hvenegaard and Perkins 2019), promotion of socialization and group integration (Ding and Schuett 2020; Hvenegaard and Perkins 2019; Laverie and McDonald 2007; Newton, Becker, and Bell 2014; Pagès, Fischer, and van der Wal 2018; Schild 2018), recognition of volunteers and providing positive feedback (Gulliver, Fielding, and Louis 2022; Hvenegaard and Perkins 2019) and an emotional attachment to an organization, project or place (Frensley et al. 2017; Laverie and McDonald 2007; Pagès, Fischer, and van der Wal 2018; Schild 2018).

It is argued that these factors are beneficial as they increase the commitment of volunteers by increasing volunteers' connectedness and making them feel valued and appreciated, such as by providing ongoing education and training, demonstrating a commitment to volunteers. Successful volunteer-based projects account for volunteer motivations, life experiences and socialization; they tend to be focused, long-term and provide volunteers with training, support and recognition (Bruyere and Rappe 2007; Gulliver, Fielding, and Louis 2022; Newton, Becker, and Bell 2014; Van Den Berg, Dann, and Dirkx 2009).

Conclusion

Volunteers play an important role in conservation in many countries, and have the potential to be a cost-effective workforce, contributing to achieving conservation goals, and acting as advocates for conservation initiatives in their local communities (Bushway et al. 2011; Clary et al. 1998; Conrad and Hilchey 2011; CVNZ, 2022; Peters, Hamilton, and Eames 2015). However, many environmental organizations have issues with low volunteer recruitment and high turnover rates (Asah and Blahna 2013; Bushway et al. 2011; Ding and

Schuett 2020; Higgins and Shackleton 2015). An increased understanding of environmental volunteer motivations is important to increase recruitment and retention of volunteers and therefore improve the outcome of environmental initiatives.

This paper has provided an overview of all the peer-reviewed papers published between 2001 and 2022 presenting original research about environmental volunteering motivations across countries, age ranges and demographics. The literature highlights a series of key motivations for environmental volunteers including helping the environment, learning about the environment, project management, social factors and reflection, helping the community, fitness, being outdoors, personal values, career advancement, educating others and a connection to nature.

It is also shown that individual volunteers can have a range of motivations, which often change over time. Therefore, to encourage volunteers it is important that environmental groups offer a variety of tasks, which reflect typical volunteer motivations. Encouraging relationships and social interactions between volunteers and within environmental groups has been found to build a sense of community, which in turn leads to increased longevity of volunteers. Successful environmental volunteer projects take volunteer motivations, life experiences and socialization into consideration. They are often highly focused, long-term initiatives and that provide regular training, support and recognition, and fulfill volunteer motivations, promoting committed, long-term volunteers.

There is significant scope for future research in this area. A high proportion of the research into environmental volunteer motivations has been undertaken in the United States or Australia. As such, further research in other countries and research comparing volunteer experiences in different countries could provide valuable insight into local effects and socio-cultural variation in motivations. Different countries also have different types of conservation initiatives. For example, community-based conservation in New Zealand has a strong emphasis on mammalian predator control, which may not be as important in other countries. This has implications for the types of tasks carried out by volunteers which may affect volunteer motivations. There is also scope for more local and regional studies to help identify if there is a difference in motivations between groups and locations within the same country. Knowledge of local volunteer motivations would be helpful when setting up new initiatives and helping design strategies to maintain long term volunteers. Studies looking at the motivations of volunteer-based environmental monitoring, would also be useful to help volunteers contribute to data collection. Overall, more studies in this area could help clarify findings of other studies and add to the growing body of literature on environmental volunteer motivations.

References

Akin, H., B. Shaw, K. F. Stepenuck, and E. Goers. 2013. Factors associated with ongoing commitment to a volunteer stream-monitoring program. *Journal of Extension* 51 (3), Article 25. doi: 10.34068/joe.51.03.25.

Alender, B. 2016. Understanding volunteer motivations to participate in citizen science projects: A deeper look at water quality monitoring. *Journal of Science Communication* 15 (03):A04. doi: 10.22323/2.15030204.

Asah, S. T., and D. J. Blahna. 2012. Motivational functionalism and urban conservation stewardship: Implications for volunteer involvement. *Conservation Letters* 5 (6):470–7. doi: 10.1111/j.1755-263X.2012.00263.x.

Asah, S. T., and D. J. Blahna. 2013. Practical implications of understanding the influence of motivations on commitment to voluntary urban conservation stewardship. *Conservation Biology: The Journal of the Society for Conservation Biology* 27 (4):866–75. doi: 10.1111/cobi.12058.

Asah, S. T., M. M. Lenentine, and D. J. Blahna. 2014. Benefits of urban landscape eco-volunteerism: Mixed methods segmentation analysis and implications for volunteer retention. *Landscape and Urban Planning* 123:108–13. doi: 10.1016/j.landurbplan.2013.12.011.

Berkes, F. 2004. Rethinking community-based conservation. *Conservation Biology* 18 (3):621–30. doi: 10.1111/j.1523-1739.2004.00077.x.

Bramston, P., G. Pretty, and C. Zammit. 2011. Assessing environmental stewardship motivation. *Environment and Behavior* 43 (6):776–88. doi: 10.1177/0013916510382875.

Bruyere, B., and S. Rappe. 2007. Identifying the motivations of environmental volunteers. *Journal of Environmental Planning and Management* 50 (4):503–16. doi: 10.1080/09640560701402034.

Brymer, E., T. Cuddihy, and V. Sharma-Brymer. 2010. The role of nature-based experience in the development and maintenance of wellness. *Asia-Pacific Journal of Health, Sport and Physical Education* 1 (2):21–7. doi: 10.1080/18377122.2010.9730328.

Bushway, L., J. Dickinson, R. Stedman, L. Wagenet, and D. Weinstein. 2011. Benefits, motivations, and barriers related to environmental volunteerism for older adults: Developing a research agenda. *International Journal of Aging & Human Development* 72 (3):189–206. doi: 10.2190/AG.72.3.b.

Chacón, F., G. Gutiérrez, V. Sauto, M. L. Vecina, and A. Pérez. 2017. Volunteer functions inventory: A systematic review. *Psicothema* 29 (3):306–16. doi: 10.7334/psicothema2016.371.

Chen, P. W., L. K. Chen, H. K. Huang, and C. H. Loh. 2022. Productive aging by environmental volunteerism: a systematic review. *Archives of Gerontology and Geriatrics* 98:104563. doi: 10.1016/j.archger.2021.104563.

Clary, E. G., R. D. Ridge, A. A. Stukas, M. Snyder, J. Copeland, J. Haugen, and P. Miene. 1998. Understanding and assessing the motivations of volunteers: A functional approach. *Journal of Personality and Social Psychology* 74 (6):1516–30. doi: 10.1037/0022-3514.74.6.1516.

Conrad, C., and K. G. Hilchey. 2011. A review of citizen science and community-based environmental monitoring: Issues and opportunities. *Environmental Monitoring and Assessment* 176 (1–4):273–91. doi: 10.1007/s10661-010-1582-5.

Conservation Volunteers New Zealand (CVNZ). 2022. *Deep roots, strong future. Puronga a-Tau Annual Report*. Conservation Volunteers New Zealand, Auckland, New Zealand. https://communityresearch.org.nz/wp-content/uploads/2012/11/mahi-aroha1.pdf.

Ding, C., and M. A. Schuett. 2020. Predicting the commitment of volunteers' environmental stewardship: Does generativity play a role? *Sustainability* 12 (17):6802. doi: 10.3390/su12176802.

Domroese, M. C., and E. A. Johnson. 2017. Why watch bees? Motivations of citizen science volunteers in the Great Pollinator Project. *Biological Conservation* 208:40–7. doi: 10.1016/j.biocon.2016.08.020.

Dudley, N., L. Higgins-Zogib, and S. Mansourian. 2009. The links between protected areas, faiths, and sacred natural sites. *Conservation Biology: The Journal of the Society for Conservation Biology* 23 (3):568–77. doi: 10.1111/j.1523-1739.2009.01201.x.

Dunkley, R. A. 2019. Monitoring ecological change in UK woodlands and rivers: An exploration of the relational geographies of citizen science. *Transactions of the Institute of British Geographers* 44 (1):16–31. doi: 10.1111/tran.12258.

Frensley, T., A. Crall, M. Stern, R. Jordan, S. Gray, M. D. Prysby, G. Newman, C. Hmelo-Silver, D. Mellor, and J. Huang. 2017. Bridging the benefits of online and community supported science: A case study on motivation and retention with conservation-orientated volunteers. *Citizen Science: Theory and Practice* 2 (1):4. doi: 10.5334/cstp.84.

Ganzevoort, W., and R. J. G. van den Born. 2020. Understanding citizens' action for nature: The profile, motivations and experiences of Dutch nature volunteers. *Journal for Nature Conservation* 55:125824. doi: 10.1016/j.jnc.2020.125824.

Ganzevoort, W., R. J. G. van den Born, W. Halffman, and S. Turnhout. 2017. Sharing biodiversity data: citizen scientists' concerns and motivations. *Biodiversity and Conservation* 26 (12):2821–37. doi: 10.1007/s10531-017-1391-z.

Gratzer, K., and R. Brodschneider. 2021. How and why beekeepers participate in the INSIGNIA citizen science honey bee environmental monitoring project. *Environmental Science and Pollution Research International* 28 (28):37995–8006. doi: 10.1007/s11356-021-13379-7.

Guiney, M. S., and K. S. Oberhauser. 2009. Conservation volunteers' connection to nature. *Ecopsychology* 1 (4):187–97. doi: 10.1089/eco.2009.0030.

Gulliver, R. E., K. S. Fielding, and W. R. Louis. 2022. An investigation of factors influencing environmental volunteering leadership and participation behaviors. *Nonprofit and Voluntary Sector Quarterly* 52 (2):397–420. doi: 10.1177/08997640221093799.

Heimann, A., and F. Medvecky, Centre for Science Communication, P.O. Box 56, Dunedin 9054 NZ, University of Otago, Dunedin, New Zealand. 2022. Attitudes and motivations of New Zealand conservation volunteers. *New Zealand Journal of Ecology* 46 (1):1–13. doi: 10.20417/nzjecol.46.18.

Higgins, O., and C. M. Shackleton. 2015. The benefits from and barriers to participation in civic environmental organisations in South Africa. *Biodiversity and Conservation* 24 (8):2031–46. doi: 10.1007/s10531-015-0924-6.

Hobbs, S. J., and P. C. L. White. 2012. Motivations and barriers in relation to community participation in biodiversity recording. *Journal for Nature Conservation* 20 (6):364–73. doi: 10.1016/j.jnc.2012.08.002.

Hoye, J., K. McGowan, S. Twist, and D. Reeves. 2020. *Environmental volunteering social research report*. Department of Environment, Land, Water and Planning, Melbourne, Australia. https://www.environment.vic.gov.au/__data/assets/pdf_file/0015/510810/NGR-2005009-Environmental-Volunteering-Research-Report-Public-Final.pdf.

Hvenegaard, G. T., and R. Perkins. 2019. Motivations, commitment, and turnover of bluebird trail managers. *Human Dimensions of Wildlife* 24 (3):250–66. doi: 10.1080/10871209.2019.1598521.

Johnson, M. L., L. K. Campbell, E. S. Svendsen, and P. Silva. 2018. Why count trees? Volunteer motivations and experiences with tree monitoring in New York City. *Arboriculture & Urban Forestry* 44 (2):59–72. doi: 10.48044/jauf.2018.006.

Kable, A. K., J. Pich, and S. E. Maslin-Prothero. 2012. A structured approach to documenting a search strategy for publication: a 12 step guideline for authors. *Nurse Education Today* 32 (8):878–86. doi: 10.1016/j.nedt.2012.02.022.

Katz, H., and U. Sasson. 2019. Beyond universalistic motivations: Towards an adolescent volunteer functions inventory. *Voluntary Sector Review* 10 (2):189–211. doi: 10.1332/204080519X15629379320509.

Krasny, M. E., S. R. Crestol, K. G. Tidball, and R. C. Stedman. 2014. New York City's oyster gardeners: Memories and meanings as motivations for volunteer environmental stewardship. *Landscape and Urban Planning* 132:16–25. doi: 10.1016/j.landurbplan.2014.08.003.

Larson, L. R., C. B. Cooper, S. Futch, D. Singh, N. J. Shipley, K. Dale, G. S. LeBaron, and J. Y. Takekawa. 2020. The diverse motivations of citizen scientists: Does conservation emphasis grow as volunteer participation progresses? *Biological Conservation* 242:108428. doi: 10.1016/j.biocon.2020.108428.

Laverie, D. A., and R. E. McDonald. 2007. Volunteer dedication: Understanding the role of identity importance on participation frequency. *Journal of Macromarketing* 27 (3):274–88. doi: 10.1177/0276146707302837.

Liarakou, G., E. Kostelou, and C. Gavrilakis. 2011. Environmental volunteers: Factors influencing their involvement in environmental action. *Environmental Education Research* 17 (5):651–73. doi: 10.1080/13504622.2011.572159.

Madsen, S. F., F. Ekelund, N. Strange, and J. Sølver Schou. 2021. Motivations of volunteers in Danish grazing organizations. *Sustainability (Switzerland)* 13 (15):8163. doi: 10.3390/su13158163.

McAteer, B., W. Flannery, and B. Murtagh. 2021. Linking the motivations and outcomes of volunteers to understand participation in marine community science. *Marine Policy* 124:104375. doi: 10.1016/j.marpol.2020.104375.

McDougle, L., F. Handy, T. Katz-Gerro, I. Greenspan, and H. Y. Lee. 2015. Factors predicting proclivity and intensity to volunteer for the environment in the US and South Korea. *Journal of Environmental Planning and Management* 58 (5):837–54. doi: 10.1080/09640568.2014.899204.

Measham, T. G., and G. B. Barnett. 2008. Environmental volunteering: Motivations, modes and outcomes. *Australian Geographer* 39 (4):537–52. doi: 10.1080/00049180802419237.

Mitchell, R., and F. Popham. 2008. Effect of exposure to natural environment on health inequalities: an observational population study. *Lancet (London, England)* 372 (9650):1655–60. doi: 10.1016/S0140-6736(08)61689-X.

Newton, C., K. Becker, and S. Bell. 2014. Learning and development opportunities as a tool for the retention of volunteers: A motivational perspective. *Human Resource Management Journal* 24 (4):514–30. doi: 10.1111/1748-8583.12040.

O'Brien, L., M. Townsend, and M. Ebden. 2010. 'Doing something positive': Volunteers' experiences of the well-being benefits derived from practical conservation activities in nature. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations* 21 (4):525–45. doi: 10.1007/s11266-010-9149-1.

O'Brien, L., M. Townsend, and M. Ebden. 2008. *I like to think when I'm gone I will have left this a better place' Environmental volunteering: motivations, barriers and benefits*. Report to the Scottish Forestry Trust and Forestry Commission, Edinburgh, Scotland. https://cdn.forestresearch.gov.uk/2022/02/env_volunteering_full_report.pdf.

Ohmer, M. L., P. Meadowcroft, K. Freed, and E. Lewis. 2009. Community gardening and community development: Individual, social and community benefits of a community conservation program. *Journal of Community Practice* 17 (4):377–99. doi: 10.1080/10705420903299961.

Pagès, M., A. Fischer, and R. van der Wal. 2018. The dynamics of volunteer motivations for engaging in the management of invasive plants: insights from a mixed-methods study on Scottish seabird islands. *Journal of Environmental Planning and Management* 61 (5-6):904–23. doi: 10.1080/09640568.2017.1329139.

Patrick, R., C. Henderson-Wilson, and M. Ebden. 2021. Exploring the co-benefits of environmental volunteering for human and planetary health promotion. *Health Promotion Journal of Australia: official Journal of Australian Association of Health Promotion Professionals* 33 (1):57–67. doi: 10.1002/hpja.460.

Peters, M. A., D. P. Hamilton, and C. W. Eames. 2015. Action on the ground: A review of community environmental groups' restoration objectives, activities and partnerships in New Zealand. *New Zealand Journal of Ecology* 39 (2):179–89. doi: 130.123.99.4.

Petticrew, M., and H. Roberts. 2006. *Systematic reviews in the social sciences: A practical guide*. Blackwell Publishing, Malden, United States.

Pillemer, K., N. W. Wells, R. H. Meador, L. Schultz, C. R. Henderson, M. T. Cope, and S. Meeks. 2017. Engaging older adults in environmental volunteerism: The retirees in service to the environment program. *The Gerontologist* 57 (2):367–75. doi: 10.1093/geront/gnv693.

Raihania, J., and A. Walker. 2007. Mahi aroha: Māori perspectives on volunteering and cultural obligations. Office for the Community and Voluntary Sector, Tari mō te Rāngai ā-Hapori, ā-Tūao, Wellington, New Zealand. https://communityresearch.org.nz/wp-content/uploads/2012/11/mahi-aroha1.pdf.

Robinson, J. A., D. Kocman, O. Speyer, and E. Gerasopoulos. 2021. Meeting volunteer expectations—a review of volunteer motivations in citizen science and best practices for their retention through implementation of functional features in CS tools. *Journal of Environmental Planning and Management* 64 (12):2089–113. doi: 10.1080/09640568.2020.1853507.

Ruiz-Mallén, I., and E. Corbera. 2013. Community-based conservation and traditional ecological knowledge: Implications for social-ecological resilience. *Ecology and Society* 18 (4), Article 12. doi: 10.5751/ES-05867-180412.

Ruiz-Mallén, I., C. Schunko, E. Corbera, M. Rös, and V. Reyes-García. 2015. Meanings, drivers, and motivations for community-based conservation in Latin America. *Ecology and Society* 20 (3), Article 33. doi: 10.5751/ES-07733-200333.

Russell, R., A. Guerry, P. Balvanera, R. Gould, X. Basurto, K. Chan, S. Klain, J. Levine, and J. Tam. 2013. Humans and nature: How knowing and experiencing nature affect human well-being. *Annual Review of Environment and Resources* 38 (1):473–502. doi: 10.1146/annurev-environ-012312-110838.

Ryan, R. L., R. Kaplan, and R. E. Grese. 2001. Predicting volunteer commitment in environmental stewardship programmes. *Journal of Environmental Planning and Management* 44 (5):629–48. doi: 10.1080/09640560120079948.

Schild, R. 2018. Fostering environmental citizenship: the motivations and outcomes of civic recreation. *Journal of Environmental Planning and Management* 61 (5–6):924–49. doi: 10.1080/09640568.2017.1350144.

Schuett, M. A., G. T. Kyle, J. Leitz, K. Kurzawski, and K. Lee. 2014. Anglers' motivations for volunteering with fishing or conservation organizations. *Fisheries* 39 (7):305–11. doi: 10.1080/03632415.2014.924407.

Seymour, V., M. King, and R. Antonaci. 2018. Understanding the impact of volunteering on pro-environmental behavioural change. *Voluntary Sector Review* 9 (1):73–88. doi: 10.1332/204080518X15155917206307.

Seymour, V., M. King, and R. Antonaci. 2020. Exploring those characteristics which may help to foster and support people's social-ecological resilience: an environmental volunteering case study. *Journal of Environmental Studies and Sciences* 10 (4):438–56. doi: 10.1007/s13412-020-00590-0.

Sloane, G. M. T., and U. Pröbstl-Haider. 2019. Motivation for environmental volunteering: A comparison between Austria and Great Britain. *Journal of Outdoor Recreation and Tourism* 25:158–68. doi: 10.1016/j.jort.2019.01.002.

Takase, Y., A. A. Hadi, and K. Furuya. 2019. The relationship between volunteer motivations and variation in frequency of participation in conservation activities. *Environmental Management* 63 (1):32–45. doi: 10.1007/s00267-018-1106-6.

The Conservation Volunteers (TCV). 2021. *For people and green spaces: A thriving network for everyone. Strategy 2021-2025*. The Conservation Volunteers, Doncaster, England. https://www.tcv.org.uk/wp-content/uploads/2021/07/Strategy_brochure_visual-final-singles.pdf.

Thomas, J. L., M. Cullen, D. O'Leary, C. Wilson, and J. A. Fitzsimons. 2021. Characteristics and preferences of volunteers in a large national bird conservation program in Australia. *Ecological Management & Restoration* 22 (1):100–5. doi: 10.1111/emr.12442.

Tuao Aotearoa. 2023. *Best practice guidelines Te Anga Wahitake*. Volunteering New Zealand, Wellington, New Zealand. https://www.volunteeringnz.org.nz/wp-content/uploads/BPGs_FINAL-for-online_29-FEB.pdf.

Tulloch, A. I. T., Mustin, K. H. P. Possingham, J. K. Szabo, K. A. Wilson. and K. A. 2013. To boldly go where no volunteer has gone before: Predicting volunteer activity to prioritize surveys at the landscape scale. *Diversity and Distributions* 19 (4):465–80. doi: 10.1111/j.1472-4642.2012.00947.x.

Turnbull, J. W., E. L. Johnston, L. Kajlich, and G. F. Clark. 2020. Quantifying local coastal stewardship reveals motivations, models and engagement strategies. *Biological Conservation* 249:108714. doi: 10.1016/j.biocon.2020.108714.

Van Den Berg, H. A., S. L. Dann, and J. M. Dirkx. 2009. Motivations of adults for non-formal conservation education and volunteerism: Implications for programming. *Applied Environmental Education & Communication* 8 (1):6–17. doi: 10.1080/15330150902847328.

Walker, S., R. T. T. Stephens, and J. M. Overton. 2012. A unified approach to conservation prioritisation, reporting and information gathering in New Zealand. *New Zealand Journal of Ecology* 36 (2):243–51.

West, S., A. Dyke, and R. Pateman. 2021. Variations in the motivations of environmental citizen scientists. *Citizen Science: Theory and Practice* 6 (1):1–18. doi: 10.5334/cstp.370.

Woosnam, K. M., M. Strzelecka, G. S. Nisbett, and S. J. Keith. 2019. Examining millennials' global citizenship attitudes and behavioral intentions to engage in environmental volunteering. *Sustainability* 11 (8):2324. doi: 10.3390/su11082324.

Wright, D. R., L. G. Underhill, M. Keene, and A. T. Knight. 2015. Understanding the motivations and satisfactions of volunteers to improve the effectiveness of citizen science programs. *Society & Natural Resources* 28 (9):1013–29. doi: 10.1080/08941920.2015.1054976.

Zuo, A., S. A. Wheeler, and J. Edwards. 2016. Understanding and encouraging greater nature engagement in Australia: Results from a national survey. *Journal of Environmental Planning and Management* 59 (6):1107–25. doi: 10.1080/09640568.2015.1054926.