Community-based conservation volunteering: Motivations, barriers, and strategies for volunteer recruitment and retention to optimise conservation outcomes

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ABSTRACT

Community-based conservation involves members of the public participating in a wide range of natural resource management activities. It empowers people to contribute to taking care of the environment in their local area. Community-based conservation is growing in Aotearoa New Zealand, and around the world. Aotearoa New Zealand has approximately 940 community-based conservation groups. Collectively, these groups make an invaluable contribution to biodiversity conservation in Aotearoa New Zealand. Community-based conservation in Aotearoa New Zealand is extremely important as there is a need for ongoing conservation initiatives due to significant habitat loss and the devastating impact of introduced mammalian predators However, there is little research investigating what motivates individuals to participate in these groups and the factors that may limit their ability to get involved and stay involved.

Using the Manawatū region of Aotearoa New Zealand as a study site, this research explores the factors that influence public participation in community-based conservation. It investigates what motivates participation; what volunteers gain from participation; what prevents or stops participation; and what can be done to encourage more participation in community-based conservation. Following a systematic literature review, three research methods were used: an online investigation of local community-based conservation groups, in depth semi-structured interviews with 21 key stakeholders, and an online questionnaire completed by 101 local community-based conservation volunteers. The questionnaire covered volunteering details, demographic characteristics of volunteers, motivations, commitment, satisfaction, barriers to volunteering, environmental monitoring and pro-environmental behaviours.

The research showed that community-based conservation volunteers in the Manawatū tended to be older, highly educated and either retired or in less than full time employment. The most important initial motivation factors were found to be “to care for the environment” followed by “to help the

local community", "as a connection to nature" and "to be outside, or amongst nature". "To advance my career" was the least important motivation factor followed by "for stress relief or escape" and "to get exercise". The research showed that the most successful form of recruitment was through social interactions with volunteers and word of mouth. The main barriers to participation were time taken, travelling distance and health issues. Long-term motivations were similar to initial motivations with "to care for the environment" and "to help the local community" identified as the most important, in both instances. "To learn new skills, or knowledge" is the only motivational factor that decreased in importance between initial and long-term motivations. Some motivation factors increased substantially in importance including "to help the local community", "to socialize with others" and "for stress relief or escape". A high proportion of volunteers also had a strong connection to the group or place where they volunteered and to nature in general. Relationships between volunteers, non-government organisations and government agencies also impacted the success of local groups, and community-based environmental monitoring was key to obtaining funding and documenting success.

The findings of this study will be useful in informing strategies for the recruitment and retention of volunteers and to improve the success of local community-based conservation in a range of settings. Such strategies might include managers of community-based conservation groups explicitly taking motivation factors into account within project and programme design and implementation, allowing more time for socialisation between volunteers, providing volunteers with ongoing training, education and recognition, providing a range of flexible volunteering opportunities targeting different types of volunteers, building positive relationships with other groups, relevant government agencies, local businesses and iwi, and working more collaboratively with other community-based conservation groups to achieve shared objectives.

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LIST OF ACRONYMS

CBC	Community-based conservation
CBCG	Community-based conservation groups
CBEM	Community-based environmental monitoring
DOC	Department of Conservation
ENM	Environment Network Manawatū
NGO	Non-government organisation
NPO	Non-profit organisation
NPSIB	National Policy Statement for Indigenous Biodiversity
NZBS	New Zealand Biodiversity Strategy
PNCC	Palmerston North City Council
VFI	Volunteer Function Inventory

LIST OF PUBLICATIONS

This thesis was prepared as a "PhD Thesis by Publication" in accordance with Massey University's Guidelines for Theses by Publication. As such, the body of the thesis consists of four journal articles. Three of these have been published and one is currently under review as outlined below:

Chapter 3 Sextus, C., Hytten, K.F., & Perry, P. (2024). A systematic review of environmental volunteer motivations. *Society and Natural Resources.* https://doi.org/10.1080/08941920.2024.2381202

Chapter 4 Sextus, C. P., Hytten, K.F., & Perry, P. (2024). Exploring the motivations of community-based conservation volunteers in Aotearoa New Zealand. (Currently under review).

Chapter 5 Sextus, C. P., Hytten, K.F., & Perry, P. (2024). Volunteer commitment and longevity in community-based conservation in Aotearoa New Zealand. *Kōtuitui: New Zealand Journal of Social Sciences Online*. https://doi.org/10.1080/1177083X.2024.2335995

Chapter 6 Sextus, C. P., Hytten, K.F., & Perry, P. (2024). Barriers to volunteering and other challenges facing community-based conservation in Aotearoa New Zealand. *Pacific Conservation Biology*. https://doi.org/10.1071/PC24029

In keeping with the guidelines, the formatting of these manuscripts has been edited to ensure the thesis is consistently formatted throughout. The individual reference lists have been compiled into one reference list at the end of the thesis to avoid disruption and duplication. Otherwise the text of these manuscripts remain as published or submitted. As a consequence, there is some repetition in the description of the research methods. The published versions of Chapter 3, Chapter 5 and Chapter 6 are provided in Appendix 8, Appendix 9 and Appendix 10.

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You all are, and always will be my reasons for achieving great things.

1. INTRODUCTION

1.1 Overview

Community-based conservation (CBC) involves the participation of members of the public in local conservation initiatives, and empowers people to contribute to protecting and enhancing their local environment. Participation in CBC is growing in Aotearoa New Zealand and around the world (Innes, 2012; Peters, Hamilton, & Eames, 2015; McFarlane, 2024), and plays a crucial role in protecting natural ecosystems and preserving biodiversity. CBC is particularly important in Aotearoa New Zealand given the impact of habitat loss and introduced mammalian predators, all of which contribute to Aotearoa New Zealand facing a biodiversity crisis (Department of Conservation, 2020b, 2023) with the highest proportion of threatened species in the world (Bradshaw, Giam, & Sodhi, 2010; Ministry for the Environment & Stats NZ, 2022). In order for the Department of Conservation (DOC) to be successful in halting the decline in biodiversity, they rely on volunteers to actively contribute to conservation initiatives, and there is an ongoing need for more CBC volunteers (Forgie, Horsley, & Johnston, 2001; Jay, 2005; McNamara & Jones, 2016). Aotearoa New Zealand has approximately 940 community-based conservation groups (CBCGs) (McFarlane, 2024), focused on planting and maintaining native vegetation, managing invasive weeds, and controlling introduced predators (Craig et al., 2000; Jones & Kirk, 2018).

CBC in Aotearoa New Zealand involves a wide range of stakeholders, with many CBC initiatives underpinned by partnerships between local community members, private landowners, local iwi[1], community trusts and other non-government organisations (NGOs), local governments and DOC (Berkes, 2004; Department of Conservation & Ministry for the Environment, 2000; Innes, 2012; Peters, Hamilton, et al., 2015). These stakeholders have varying perspectives on conservation, and the

[1] Iwi are an "extended kinship group, tribe, nation, people, nationality" and "often refers to a large group of people descended from a common ancestor and associated with a distinct territory" (Moorfield, 2024).

incorporation of multiple perspectives has been found to have a positive impact on conservation outcomes (Berkes, 2003, 2007). The New Zealand Biodiversity Strategy (NZBS) emphasises that restoring and maintaining biodiversity and healthy functioning ecosystems requires the support of local communities and private landowners, in partnership with iwi (Department of Conservation, 2020b; Department of Conservation & Ministry for the Environment, 2000; Jay, 2005; McNamara & Jones, 2016).

Similarly, the National Policy Statement for Indigenous Biodiversity (NPSIB), which aims to protect, maintain and restore indigenous biodiversity, explicitly highlights the importance of "opportunities to engage the community, including tangata whenua[2], in conservation and, in particular, to connect urban people and communities to indigenous biodiversity" (Ministry for the Environment, 2023 p. 46). In this context, the NPSIB emphasises the crucial role of communities in achieving conservation objectives:

> This National Policy Statement prioritises the mauri[3] and intrinsic value of indigenous biodiversity and recognises people's connections and relationships with indigenous biodiversity. It recognises that the health and wellbeing of people and communities are dependent on the health and wellbeing of indigenous biodiversity and that in return people have a responsibility to care for and nurture it. It acknowledges the web of interconnectedness between indigenous species, ecosystems, the wider environment, and the community, at both a physical and metaphysical level (Ministry for the Environment, 2023 p. 6).

This thesis investigates the motivations of CBC volunteers in the Manawatū region of Aotearoa New Zealand. There are a wide range of CBCGs in the Manawatū region. These groups are involved in a diverse range of activities, including growing and planting native plants, undertaking weed and pest control, and participating in species monitoring and translocations (The Environment Network Manawatū, 2020). Many CBCGs within the Manawatū region are members of the Environment

[2] Tangata whenua are the local indigenous people of a specific area (Moorfield, 2024).
[3] Mauri means life principle, life force, vital essence, special nature, a material symbol of a life principle, source of emotions - the essential quality and vitality of a being or entity. Also used for a physical object, individual, ecosystem or social group in which this essence is located (Moorfield, 2024).

Network Manawatū (ENM), which provides support for local CBCGs and promotes communication, cooperation and collective action of CBCGs and the local community (Environment Network Manawatū, 2023).

The Palmerston North City Council (PNCC) is also involved in regenerating native biodiversity. PNCC has invested in extensive predator control which has boosted native flora and fauna populations in the Turitea Reserve. They have also begun to plant a series of "green corridors" connecting the Turitea Reserve to the Manawatū River and into the city, in an attempt to increase native birdlife throughout the city. PNCC aims to enhance conservation efforts by building relationships with community members and iwi and by contributing to increasing coordination and facilitation between CBCGs and other stakeholders (Palmerston North City Council, 2018). The most recent Biodiversity Plan for Palmerston North incorporates renewed recognition of iwi rights. In this context, PNCC is working on building and developing relationships with local iwi. This will help to ensure that iwi have a primary role in decision-making and will allow local Māori knowledge to be incorporated into decisions regarding understanding and managing indigenous species (Palmerston North City Council, 2018). Horizon's Regional Council also plays an important role in local conservation efforts through three environmental programmes including the Priority Habitats Programme, the Biodiversity Partnerships Programme, and the maintenance of Tōtara Reserve Regional Park (Horizons Regional Council, 2024a).

As in many parts of Aotearoa New Zealand, conservation initiatives in the Manawatū region are heavily reliant upon CBC volunteers due to the impact of introduced pest species and the vulnerability of native fauna and flora. There is also an ongoing need for more volunteers. Both recruitment of new volunteers and retention of seasoned volunteers is critical to the success of local conservation goals. Therefore, a clear understanding of volunteers individual motivations for volunteering would help to promote CBC and build a volunteer workforce of satisfied and committed volunteers who regularly participate in community-based conservation over many years.

1.2 Aim and research questions

The aim of this research is to explore the what motivates people to participate in community-based conservation.

In order to address this aim, four broad research questions will be investigated:

1. What motivates people to participate in community-based conservation?
2. What motivates people to be committed to community-based conservation?
3. What are the barriers to recruiting and retaining community-based conservation volunteers?
4. What can be done to encourage more public participation in community-based conservation?

Firstly, the remainder of this chapter will define community-based conservation, consider its importance, and summarise key literature relating to community-based conservation and community-based environmental monitoring in Aotearoa New Zealand. It will also explore some key concepts underpinning CBC including participation, volunteer motivation and pro-environmental behaviours, and outline the need for this research. Chapter 2 will explain the research methods used to investigate the four research questions. Chapter 3 will then present a systematic review of current literature investigating research questions 1 and 2. This provides the foundation for Chapters 4, 5 and 6 which each use the Manawatū region as a case study to investigate research questions 1, 2 and 3 respectively. Each of these chapters also considers research question 4 which is further reflected upon in Chapter 7, which discusses the key themes that emerged across all four chapters and draws the thesis to a conclusion.

1.3 Community-based conservation

The number of community-based conservation groups is growing in Aotearoa New Zealand, and around the world, with governments and non-government organisations increasing their engagement

with volunteers in order to improve their ability to manage natural resources and protect threatened species (Conrad & Hilchey, 2011; Peters, Hamilton, et al., 2015).

In Aotearoa New Zealand, CBCGs have made a significant contribution towards maintaining and restoring a range of ecosystems and conserving biodiversity (McNamara & Jones, 2016; Sullivan & Molles, 2016; Young, 2004). There is a recognised need for an increase in CBC in New Zealand, as identified in government strategies and reports (Department of Conservation, 2020a, 2023b; Department of Conservation & Ministry for the Environment, 2000; Forgie et al., 2001). To halt the rapid decline of indigenous biodiversity in Aotearoa New Zealand, DOC needs to develop and enhance collaborative partnerships with iwi, local communities and private landowners (Department of Conservation & Ministry for the Environment, 2000; Forgie et al., 2001; Jay, 2005; McNamara & Jones, 2016). However, CBCGs in Aotearoa New Zealand, as in other places in the world, struggle with the recruitment and retention of CBC volunteers. Without the support of local CBCGs many of Aotearoa New Zealand's conservation initiatives would not be possible (Department of Conservation, 2020a, 2021).

Monitoring by CBCGs, or community-based environmental monitoring (CBEM) forms an integral part of many environmental restoration projects, and the data they collect, although often underused, is a valuable resource which can inform government and non-government initiatives (Peters, Hamilton, et al., 2015). New Zealand studies have frequently shown that CBCG projects are producing positive outcomes and have made a significant contribution to habitat restoration, species translocation and pest control (Hardie-Boys, 2010; Orchard, 2019; Sullivan & Molles, 2016; Young, 2004). In this context, CBCGs have the potential to enhance the government's efforts to effectively achieve its environmental and biodiversity goals (Forgie et al., 2001).

This section defines CBC and discusses the importance of CBC and CBEM. It also explores the literature about CBC and CBEM in Aotearoa New Zealand, and how CBC has benefited conservation initiatives.

1.3.1 Defining community-based conservation

The New Zealand Conservation Act (1987) defines conservation as "the preservation and protection of natural and historic resources for the purpose of maintaining their intrinsic values, providing for their appreciation and recreational enjoyment by the public, and safeguarding the options of future generations". In practice, conservation encompasses a wide range of initiatives including habitat restoration, the prevention of deforestation, reducing overfishing, managing introduced predators, improving water quality and the protection of native wildlife.

A community is defined in the literature, as a social group of any size with members that live in a particular area (community of place) or share a set of values, political views or heritage (community of interest) (Claridge, 2004; Lachapelle & Austin, 2014). In the context of CBC, a community is often defined as a group of people who have similar environmental goals and work together to achieve them (Forgie et al., 2001).

CBC is defined in many different ways within the literature. For example, Western and Wright (1994) define CBC as initiatives that include natural resources or biodiversity protection, at the community level, with an emphasis on the co-existence of people and nature. Campbell and Vainio-Mattila (2003, p. 421) define CBC as initiatives that aim "to enhance wildlife/biodiversity conservation and to provide incentives, normally economic, for local people". Ruiz-Mallen et al. (2015) argue that CBC can be divided into two broad approaches depending on institutional arrangements and expected outcomes. The first approach is people-centred conservation which "aims at reconciling the goals of conservation and development by establishing partnerships between local communities and external organisations" (Ruiz-Mallen et al., 2015, p. 1). These partnerships are intended to increase benefits to the local community, and embrace national policies and programmes that reward communities for conservation management and stewardship (Moller, Berkes, Lyver, & Kislalioglu, 2004; Ruiz-Mallen et al., 2015; Wainwright & Wehrmeyer, 1998). The second approach uses "the existence of time-tested community-based management practices, based on customary arrangements, that have resulted in

biodiversity protection" (Berkes, 2004; Heckenberger et al., 2003; McNeely & Scherr, 2003; Ruiz-Mallen et al., 2015, p. 2). This approach emphasizes CBC as "a range of livelihood-supporting, natural resource management strategies that through long and adaptive processes of trial and error and collective learning have led to sustainable and resilient ecosystems" (Ruiz-Mallen et al., 2015, p. 2).

Common elements within this range of definitions includes the co-existence of humans and nature and the protection and/or enhancement of natural resources (Campbell & Vainio-Mattila, 2003; Ruiz-Mallen et al., 2015; Western & Wright, 1994). Ruiz-Mallen et al. (2015) and Campbell et al. (2003) also emphasize the importance of incentives and beneficial outcomes for the local people, as well as the involvement of national policies. For the purpose of this thesis the term community-based conservation will be defined as:

> A variety of conservation initiatives carried out at the community level, that aim to enhance native biodiversity and have a positive impact on the co-existence of humans and nature.

In this context, CBC encompasses a wide range of different activities 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, & Mansourian, 2009; Ruiz-Mallen et al., 2015). These different initiatives are subject to varying amounts of government involvement, have wide ranging aims and objectives and can be supported by an array of incentives to encourage local support and motivation of volunteers (Dudley et al., 2009; Ruiz-Mallen & Corbera, 2013; Ruiz-Mallen et al., 2015).

1.3.2 The importance of community-based conservation

It is widely recognised that there is an overexploitation of natural resources and underinvestment in the protection and restoration of ecosystems (Pretty, 2003). As such, there is an urgent need to better manage natural resources, restore ecosystems and conserve biodiversity (Jones & Kirk, 2018; Pretty, 2003; Pretty & Smith, 2004). One form of natural resource management is the establishment of national parks and other protected areas, which protect significant natural areas by restricting access

and the activities which can be undertaken within their boundaries (Pretty, 2002, 2003). The first modern protected area was established in Mongolia 1778 at Bogdkhan Uul (Adams, 2018), followed by Yellowstone National Park in the United States, the Royal National Park in Australia in 1879 and Banff National Park in Canada in 1885 (Hardy, 2021). Since then, 294,035 protected areas have been established worldwide (Protected Planet, 2024). Many protected areas have deeply problematic histories with indigenous people forcibly removed from their land and denied access to the natural resources they had used for centuries. The recognition of indigenous land rights has led to the recent emergence of local co-management of national parks some parts of the world (Posey, 1999; Pretty, 2003).

An increasing recognition of the value of local knowledge and skills more generally, has seen more conservation initiatives involve the local community, with an increasing trend towards co-management between governments and local groups (Pretty, 2003; Pretty & Smith, 2004). CBC has contributed to many positive conservation outcomes worldwide (Jones & Kirk, 2018; Pretty, 2003), and has helped to alleviate financial constraints on conservation agencies, in many places (Jones & Kirk, 2018; Pretty & Smith, 2004). The involvement of local people means that conservation initiatives can take advantage of local knowledge, skills and resources (Forgie et al., 2001; Jones & Kirk, 2018; Pretty, 2003), including the traditional environmental knowledge of indigenous people (Child & Jones, 2006; Moller et al., 2004). Traditional environmental knowledge combined with modern technology and data analysis has been shown to improve the management of protected areas and contribute to an increase in biodiversity (Pretty & Smith, 2004).

It is important to note that CBC can take different forms and have different priorities in different contexts. For example, in many low-income countries a high priority of conservation initiatives is to contribute to achieving a reduction in poverty. In this context, Child & Jones (2006) explain that the objective of CBC is often to improve the lives of local people while conserving areas through the creation of national parks or wildlife refuges. In the past, local people were often removed from

scenically significant areas to establish national parks. In contrast, CBC allows local people to continue to have access to their land and play an active role in managing the associated natural resources. They are also able to benefit economically from management contributing to poverty alleviation (Child & Jones, 2006). In this context, CBC is intended to support various ecological, economic and social goals and is based on the idea that socio-economic benefits and community involvement can improve social capital, lessen poverty, and increase support for conservation, which in turn can reduce threats to biodiversity and overuse of resources in the local area (Brooks, 2016; Child & Jones, 2006).

CBC in high-income countries tends to involve low budget, not-for-profit projects that focus on a small geographical area or valuable local resource (Forgie et al., 2001; Hardie-Boys, 2010; Horwich & Lyon, 2007; Wilson, 2005). In this context, CBCGs are typically voluntary and can range from small self-organised groups to large entities co-managed by government and NGOs, with formal legal structures and strategic processes (Forgie et al., 2001; Hardie-Boys, 2010; Horwich & Lyon, 2007; Wilson, 2005). CBCGs tend to rely on local government and NGOs for funding and technical support (Jones & McNamara, 2014), and are not necessarily as well trained and resourced as government agencies, due to often having a more restricted scope of skills and activities. However, CBCGs can take advantage of local knowledge and are highly motivated, as their members often have a sense of responsibility for their own local resources and environment (Forgie et al., 2001; Jones & Kirk, 2018; Orchard, 2019; Pretty & Smith, 2004). CBCGs tend to have goals based on social and environmental impacts, with minimal, if any, emphasis on economic outputs (Peters, Hamilton, et al., 2015). There is also evidence that involving communities at the early stages of conservation initiatives can lead to long-term stewardship, above and beyond what is possible for government agencies (Forgie et al., 2001; Horwich & Lyon, 2007; Jones & Kirk, 2018; Pretty & Smith, 2004).

The involvement of communities in conservation initiatives is beneficial as the local community is likely to have a better understanding of their local conditions and the environmental issues that need addressing, and often has a more flexible and efficient response (Forgie et al., 2001; Jones & Kirk,

2018; Pretty, 2003). The inclusion of the local community from the start typically leads to increased motivation, as they have a personal investment in the project. A partnership between governments and established CBCGs means that they often have the capacity to carry out longer term or larger conservation initiatives (Horwich & Lyon, 2007; Orchard, 2019; Reed, 2018). Another benefit of CBCG involvement is that CBCGs can take on some of the responsibility of conservation initiatives and can be self-regulating, reducing conflict, helping to build trust and breaking down barriers between government agencies and communities. (Forgie et al., 2001; Lindsey & McGuinness, 1998; Reed, 2018). CBC can also increase public awareness of conservation issues, which in turn can accelerate the implementation of conservation initiatives by government agencies (Forgie et al., 2001).

1.3.3 Community-based conservation in Aotearoa New Zealand

Aotearoa New Zealand was separated from other land masses for millions of years, meaning it was effectively isolated from the impacts of large terrestrial mammals, which led to the development of a unique indigenous biota (Atkinson, 2001; Clarkson & Kirby, 2016; Cooper & Millener, 1993; Gibbs, 2009; Halloy, Mark, & Dickinson, 2001; D. A. Wardle, 2006; P. Wardle, 2002). Aotearoa New Zealand's native terrestrial faunal communities included large, flightless birds, reptiles such as the tuatara, geckos, skinks and invertebrates, with many of the taxa having high levels of endemism (Atkinson & Millener, 1991; Craig et al., 2000; Phipps, 2011; Towns, Daugherty, & Cree, 2001).

Prior to human settlement, 78% of Aotearoa New Zealand was covered in thick evergreen forest, with broad-leaved evergreen conifers in the north-west and small-leaved evergreen beech in the cooler southern areas. Drier areas and those above the tree line were dominated by northern temperate grasslands, with pockets of distinctive shrub lands, herb fields, and wetlands throughout the country (McGlone, 1985; P. Wardle, 2002). Aotearoa New Zealand's forest cover was reduced to 40% within a few hundred years of Māori settlement (Mein Smith, 2011; Wilmshurst, 2007), and even more drastically reduced since European settlement. Today only approximately 6.4 million hectares of native forest remains (23% of Aotearoa New Zealand's total land area) (Native Forest Restoration

Trust, 2024; Allen, Bellingham, Holdaway & Wiser, 2013). Other ecosystem types have also been significantly degraded (Mein Smith, 2011; Young, 2004a).

Aotearoa New Zealand was first settled by Māori approximately 800 years ago, while European colonisation began around 200 years ago (Craig et al., 2000; McGlone, 1989; Saunders & Norton, 2001). Human settlement has had a dramatic, negative impact on native wildlife, especially native birds. Māori, European settlers and the exotic animals they introduced have drastically modified the landscape resulting in the decline and extinction of many native species (McGlone, 1989; McGlone, Anderson, & Holdaway, 1994; Saunders & Norton, 2001). The main causes of destruction were habitat loss and fragmentation, competition and predation from introduced pests, as well as hunting (Atkinson, 2001; Atkinson & Cameron, 1993; McFadgen, 2007; Saunders & Norton, 2001; Wilmshurst, 2007).

Habitat loss and introduced pest species have had an ongoing negative impact on Aotearoa New Zealand's native landscape and biodiversity. A high proportion of the remaining native fauna is classified as threatened, and many have low population densities, reduced habitat ranges, fragmented habitats or are restricted to offshore islands. These impacts are due to the direct and indirect impacts of human activities; many native species are threatened or extinct as a result of the presence of humans (Craig et al., 2000; McFadgen, 2007; Phipps, 2011; Saunders & Norton, 2001).

In light of this, conservation management in Aotearoa New Zealand is predominantly focused on reducing the impact of introduced mammals, invasive weeds and habitat loss and the degradation caused by human land use (Craig et al., 2000; Jones & Kirk, 2018). DOC is responsible for managing natural and historical assets on over 8.6 million hectares of crown land, with regional councils responsible for the management of pests and weeds within their regions, and both regional councils

and territorial authorities[4] responsible for managing pests and weeds on council-owned land (Clarkson & Kirby, 2016; Department of Conservation, 2023a; Jay, 2005). Traditionally, conservation and restoration have mostly focused on DOC land, including national parks, conservation reserves and offshore islands.

Conservation efforts in the 20th century tended to be very species-specific, targeting the most obvious species, mostly birds, completely overlooking many other species, such as invertebrates. The 1990's onwards saw a shift towards conserving biodiversity by protecting whole ecosystems. This shift can be partly attributed to a report published by the Ministry for the Environment in 1997 on 'The State of New Zealand's Environment', which showed a shocking decline in native biodiversity with over 800 species and 200 subspecies identified as threatened (Taylor & Smith, 1997). Over the past 20 years, conservation efforts have increasingly started to include more urban areas and their surroundings (Clarkson & Kirby, 2016; McDonnell & McGregor-Fors, 2016). The rapid decline in Aotearoa New Zealand indigenous biodiversity means that despite considerable efforts and advancements DOC does not have the capacity to reverse the decline in biodiversity independently (Forgie et al., 2001; Jay, 2005; McNamara & Jones, 2016). Due to the vulnerability of many of Aotearoa New Zealand's native species and the impact of mammalian predators and exotic plants there is an ongoing need for predator control and the removal of weeds, and therefore a constant need for more CBC volunteers and an increase in conservation initiatives.

The Resource Management Act (1991) states that protection of significant areas of indigenous fauna and flora are recognised as a matter of national importance and needs to be regarded in all resource management decisions. It also states that the government must work alongside local communities, and iwi, to protect and sustainably use natural resources. The first New Zealand Biodiversity Strategy

[4] Aotearoa New Zealand has three tiers of government: central government, 11 regional councils, and 61 territorial authorities (including 11 city councils and 50 district councils). There are also 6 unitary councils which combine the functions of both regional councils and territorial authorities in the areas they serve (LGNZ, 2024).

(2002). Also states that achieving its objective of restoring and maintaining biodiversity and healthy functioning ecosystems would require the support of local communities and private landowners, in partnership with iwi (Department of Conservation & Ministry for the Environment, 2000; Jay, 2005; McNamara & Jones, 2016). In 2020 a new version of the NZBS was released which has 13 key objectives under three themes. The most relevant theme to CBC is "empowering action" which aims to ensure that "all New Zealanders have the skills, knowledge and capability to be effective; resourcing and support are enabling connected, active guardians of nature; and collaboration, co-design and partnership are delivering better outcomes" (Department of Conservation, 2020b). In this context, the government is relying on participation and partnerships with iwi, local communities, industries, and primary producers to protect Aotearoa New Zealand's biodiversity. The NZBS was set up to facilitate a stakeholder approach where all groups can work together to achieve local goals, sharing in the responsibility and benefits of their conservation efforts (Department of Conservation & Ministry for the Environment, 2000; Forgie et al., 2001). In this context, CBCGs thus play a central role in efforts to maintain and restore ecosystems in Aotearoa New Zealand (Jay, 2005; Jones & Kirk, 2018; Sullivan & Molles, 2016).

Last year, after 13 years in development, the National Policy Statement for Indigenous Biodiversity (NPSIB) (2023) was introduced. The main objective of the National Policy Statement is:

> To maintain indigenous biodiversity across Aotearoa New Zealand so that there is at least no overall loss in indigenous biodiversity after the commencement date and to achieve this through recognising the mana of tangata whenua as kaitiaki of indigenous biodiversity; and by recognising people and communities, including landowners, as stewards of indigenous biodiversity; and by protecting and restoring indigenous biodiversity as necessary to achieve the overall maintenance of indigenous biodiversity; and while providing for the social, economic, and cultural wellbeing of people and communities now and in the future (Minstry for the Environment, 2023).

This policy has a similar theme to the NZBS with an emphasis on the role of local councils and the general public to protect, maintain and restore indigenous biodiversity (Ministry for the Environment,

2023 p. 6). Regional councils are required to collaborate with territorial authorities, tangata whenua, communities and other identified stakeholders to come up with a regional biodiversity strategy in which “opportunities to engage the community, including tangata whenua, in conservation” (Ministry for the Environment, 2023 p. 46) must be taken into account, and recorded.

Promoting participation in CBC has been found to increase local awareness, and lead to the use of local knowledge and specialised expertise to achieve local and national conservation goals (Forgie et al., 2001). Therefore, developing partnerships between government, iwi and local communities is likely to have a positive outcome on reducing environmental degradation and biodiversity loss.

For example, Predator Free 2050 is an initiative established by the New Zealand government in 2016 to eradicate introduced mammalian predators in order to protect native species. Predator Free 2050 is highly dependent on the collaborative effort of iwi, CBCGs, councils, NGOs and government stakeholders, with a considerable reliance on volunteers across the country. In order for this initiative to be successful all groups must work together and contribute to a common goal (Department of Conservation, 2020a, 2021), highlighting not only the importance of collaboration but the importance of the role of CBC volunteers.

Over the past 20 years, CBCGs have made a significant contribution to habitat restoration, species translocation and pest control in Aotearoa New Zealand, particularly in urban areas and their surroundings (Clarkson & Kirby, 2016; Sullivan & Molles, 2016; Young, 2004). The number of CBCG volunteers in Aotearoa New Zealand is increasing, and their contributions are becoming more essential (Dickinson et al., 2012; Peters, Hamilton, Eames, Innes, & Mason, 2016). Authors attribute the increase in the number of volunteers to a range of factors including an increase in public awareness of environmental impacts and an increase of people with expendable time and/or money (Hughey, Kerr, & Cullen, 2013; Peters et al., 2016; Peters, Hamilton, et al., 2015). However, many CBCGs still struggle with recruiting and retaining volunteers. The ongoing decline in biodiversity in

Aotearoa New Zealand means that there is an increased reliance on CBCGs to contribute to regional and national conservation outcomes (Dickinson et al., 2012; Silvertown, 2009; Storey, Wright-Stow, Kin, Davies-Colley, & Stott, 2016). The ongoing management of sections of land by CBCGs has been shown in many New Zealand studies to have had a positive impact on New Zealand conservation initiatives (Hardie-Boys, 2010; Sullivan & Molles, 2016; Young, 2004).

Aotearoa New Zealand has approximately 940 CBCGs (McFarlane, 2024), that have volunteers that contribute to conservation projects across a range of ecosystems, including forests, wetlands, and freshwater and marine ecosystems (Clarkson & Kirby, 2016; Peters, Hamilton, et al., 2015; Ross, 2009). CBCGs carry out a wide range of conservation initiatives that often include tasks such as, controlling invasive mammals, weed control, protection of native species and species reintroductions (Galbraith et al., 2016). CBCGs in Aotearoa New Zealand are typically small, self-organised groups consisting of mostly volunteers, although some have a few paid staff (Hardie-Boys, 2010; Peters, Hamilton, et al., 2015). In order to achieve their conservation goals many of these groups also receive support in the form of funding and technical advice from project partners which can include, DOC, local and regional councils, the lottery foundation, philanthropic trusts, NGOs, science organisations, iwi, and local businesses (Hardie-Boys, 2010; Jones & McNamara, 2014; Peters, Eames, & Hamilton, 2015a; Peters et al., 2016; Peters, Hamilton, et al., 2015; Sullivan & Molles, 2016). These project partners are increasingly requiring evidence of conservation benefits or investment returns, therefore CBCGs are often expected to carry out some form of monitoring to receive funding (Jones & Kirk, 2018).

1.3.3.1 Key stakeholders involved in supporting community-based conservation

There are a range of important stakeholders involved in supporting community-based conservation in Aotearoa New Zealand including DOC, regional councils, territorial authorities, Forest and Bird and Tangata Whenua.

DOC has an integrated ecosystem management framework for CBCGs which allows for coordination between different natural resource management agencies, and local communities across entire ecosystems. The key features of this type of management framework includes managing ecosystems as a whole, integrating the legislative requirements of a range of natural resource management agencies, encouraging collaboration between government agencies, iwi and local communities and having adaptive approaches that can change depending on social, economic and cultural issues (Department of Conservation & Ministry for the Environment, 2000; Forgie et al., 2001). Solutions to environmental issues typically depend on changing local communities' attitudes and behaviour to trigger active involvement, and has led to a more collaborative approach allowing government agencies to act as stakeholders, create a framework that encourages participation, and support and empower CBC initiatives, where communities come together to decide values, goals and strategies for themselves (Forgie et al., 2001).

Public attitudes towards DOC are important as they can have a significant impact on positive conservation outcomes and the involvement of communities in conservation activities. Arguably DOC's success depends on collaborating with and supporting community involvement and a willingness to distribute resources. Therefore, working closely with CBCGs is critical to build trust and develop relationships with local communities (Forgie et al., 2001). A study by Forgie et al. (2001) argued that DOC could be more supportive of CBCGs by distributing resources and staff, helping to interpret policies and giving advice on how to carry out planning.

Regional councils and territorial authorities financially support a number of conservation programmes which support CBC initiatives, and there are several funding initiatives available for CBCGs to apply for. They also play an important role in supporting CBCGs by providing practical guidance, training programmes and help to facilitate communication among CBCGs. However, it is important to note that many CBCG's are self-funded by support of local business and NGOs (Forgie et al., 2001).

Forest and Bird was founded in 1923, and has been an important voice in advocating for the protection of Aotearoa New Zealand's environment. Forest and Bird has over 70,000 members across Aotearoa New Zealand who work on projects to help protect waterways, forests and threatened species. Forest and Bird is also committed to working in partnership with Tangata whenua, and integrating local, regional and national campaigns. The most recent strategic plan outlines their priorities including building resilience in our ecosystems, restoring marine life and ocean health, restoring freshwater ecosystems, restoring nature in towns and cities, achieving large area pest control and securing a strong government commitment to conservation (Forest and Bird, 2020, 2023).

Tangata whenua are becoming increasingly involved in playing a pivotal role in conservation management across Aotearoa New Zealand (Roberts, Norman, Minhinnick, Wihongi, & Kirkwood, 1995; Taiepa et al., 1997), and are legally entitled to play a leadership role in environmental issues (Environment Foundation, 2018; Treaty of Waitangi Act 1975, 2024). The Conservation Act 1987 states that it must "be interpreted and administered as to give effect to the principles of the Treaty of Waitangi". Similarly, the Resource Management Act 1991 states that "all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi". As such the implications of the Ti Tiriti o Waitangi / the Treaty of Waitangi are a crucial consideration for both government agencies and non-government organisations involved conservation management (PCE, 1998; Palmer, 2008). Matauranga Māori is knowledge held by Māori, based on traditional beliefs, knowledge and concepts, and influences their perspectives on a range of issues, including conservation (Environment Foundation, 2018). Iwi are obliged to act as kaitiaki (guardians) towards taonga (treasures) in the environment within their tribal area. Current resource management laws and policies along with conservation and wildlife laws offer limited support to kaitiaki relationships stated in the Treaty (Environment Foundation, 2018 and Taiepa et al, 1997).

1.3.3.2 Community-based conservation in the Manawatū Region

Before European settlement in the late 1860s, the Manawatū region was almost completely covered in thick, native forest. The clearing of the Manawatū's forests largely took place from the 1870s to the 1910s. European settlers cleared easily accessible and marketable timber, then almost all the remaining native forest was burnt with the exception of a few small remnants. In total, 98% of original native bush in the Manawatū was cleared. The native forest was replaced with pasture, and sheep farming dominated the Manawatū's landscape. The burning of the native forest was rapid and lead to many environmental issues, such as erosion and flooding, which are still prominent in the region today (Knight, 2013). Habitat loss, along with the introduction of mammalian predators, has led to a significant decline in native species, with many species being threatened or locally extinct.

PNCC in partnership with Horizons Regional Council and DOC have instigated a series of conservation initiatives attempting to regenerate native biodiversity and encourage community involvement in local conservation. Some of these initiatives include intensive pest control in the Turitea Reserve and surrounding native bush remnants, creating biodiversity corridors or "green corridors" to link the Turitea Reserve to the city, the opening of The Central Energy Trust Wildbase Recovery Centre to educate the community about native wildlife and provide wildlife encounters and other managed areas of native bush including Moonshine Valley Reserve, Harding's Park and McCrae's Bush. All of these initiatives have had some positive outcomes with an increase in bush vitality and native species within the managed areas, and an increase of native species, such as Tui, coming into the outer parts of the city. To further increase the native biodiversity within the Manawatū there are plans to increase Māori involvement in conservation initiatives, increase both community predator control and predator control in the Turitea Reserve and surrounding bush, reintroduce locally extinct species, extend the green corridors, increase native plantings and increase the quality and attractiveness of urban streams throughout the city (Palmerston North City Council, 2018, 2021). In order to achieve these goals there is a large reliance on the local iwi; Rangitāne o Manawatū, Raukawa and Ngāti

Kauwhata and local CBC volunteers, with a significant amount of the work associated with these initiatives being carried out by volunteers.

Horizons Regional Council also works with the local community to help protect and enhance native biodiversity within the region via environmental programmes including the Priority Habitats Programme, which focuses on restoring and maintaining a range of indigenous ecosystems, and the Biodiversity Partnerships Programme, which focuses on encouraging communities to connect with nature and enhance local biodiversity. It also protects and maintains the Tōtara Reserve Regional Park (Horizons Regional Council, 2024a). Horizons Regional Council is also involved in environmental education services which offer a variety of learning opportunities to help young people connect with local environments and encourage behaviours and actions that have the potential to lead to positive environmental change (Horizons Regional Council, 2024b). They are the regional coordinator for Enviroschools, an environmental action-based programme that helps young people to carry out sustainability projects in the local community (Enviroschools, 2023).

Another important actor in the Manawatū is the Environment Network Manawatū (ENM). ENM was formed in 2000 and is now the environment hub for the Manawatū region. ENM is important to CBC in the Manawatū region as they help to facilitate communication and cooperation between CBCGs and drive collective action between CBCGs and the local community. The purposes of ENM are to:

1. Coordinate and communicate the efforts of the member groups to enhance the local environment;
2. Act as a central point of access to environmental information;
3. Advocate for ecological sustainability and matters of agreed environmental significance;
4. Work in partnership with iwi to recognise kaitiakitanga and environmental aims and objectives in common;
5. Liaise with similar organisations elsewhere in New Zealand and around the world as appropriate, to source and share ideas for environmental projects and issues (Environment Network Manawatū, 2023).

ENM also supports local environmental action through administering PNCC's Environmental Initiatives Fund, which helps fund local conservation projects that are seen to be able to improve environmental

outcomes for Palmerston North City (Environment Network Manawatū, 2023). ENM currently has 65 member groups within the Manawatū region encompassing a wide range of interests including biodiversity conservation, freshwater management, citizen science, food security and resilience, sustainable living, alternative energies, and active transport.

There are a wide variety of CBCGs that carry out a diverse range of conservation activities in the Manawatū. For example, A Rocha Manawatū is a Christian conservation organisation that grows native trees and shrubs from eco-sourced seed, for local planting projects. Pest-free Summerhill is a CBCG that has laid a series of trap lines which they maintain in order to reduce pest numbers and hopefully enhance biodiversity in urban bush areas within Palmerston North. Wildlife Foxton Trust has an educational and tourist centre in Foxton, which is used for educational purposes and to assist in the rejuvenation of Foxton with the hope of attracting tourists. Ahimate Reserve Community aims to support the development and use of Ahimate Reserve as a community asset, planting and caring for native trees. The Railway Land Action Group campaigns to retain local green spaces in urban areas to encourage the local community to take advantage of the outdoors to help improve the well-being of the general public. These and the many other CBCGs within the Manawatū each have their own projects and programmes seeking to have a positive impact on the environment and local community, in many instances in partnerships with PNCC, Horizons, and local iwi.

1.3.4 Community-based environmental monitoring

CBEM is a form of citizen science in which volunteers track changes in species abundance and distribution or measure other indicators of ecosystem health. Citizen science refers to the collection and/or analysis of data by volunteers who haven't necessarily had any formal science education (Dickinson et al., 2012; Galbraith et al., 2016; Gura, 2013; Orchard, 2019; Peters, Eames, & Hamilton, 2015a). There are many other similar terms such as volunteer monitoring, participatory resource monitoring, and community science (Galbraith et al., 2016; Gura, 2013; Orchard, 2019; Peters, Eames, & Hamilton, 2015a). CBEM can range from a simple one-off experiment to an expansive, long-term

study (Dickinson et al., 2012), and is used for a wide variety of reasons including data collection (Dickinson et al., 2012; Galbraith et al., 2016; Peters, Eames, et al., 2015a; Silvertown, Buesching, Jacobson, & Rebelo, 2013); education (Crall et al., 2012; Gura, 2013); building relationships between local people, businesses and government (Peters, Hamilton, et al., 2015); and to help with CBC management (Conrad & Hilchey, 2011; Orchard, 2019). CBEM has become a common method for carrying out long term conservation studies (Dickinson et al., 2012; Silvertown et al., 2013) and can provide data for local, regional and national decision making (Galbraith et al., 2016; Gura, 2013; Orchard, 2019).

A significant advantage of CBEM is its potential to facilitate the collection of more data than many organisations could obtain independently, as well as gathering data from under-researched areas such as private gardens and urban areas (Carr, 2004; Spurr, 2012). CBEM data can be used by resource management agencies to detect problems, classify baseline conditions and contribute to developing conservation initiatives. However, important questions remain about the quality and reliability of the data collected (Conrad & Hilchey, 2011; Peters, Eames, et al., 2015a). There have been studies showing that CBEM data can be closely aligned to that collected by professional scientists, and other studies showing large differences in quality and reliability. Peters et al. (2015a) identifies a range of factors that influence the quality of CBEM data, including technical difficulty, the variables being studied and the level of training of participants.

1.4.4.1 Community-based environmental monitoring in Aotearoa New Zealand

Out of the 940 CBCGs in Aotearoa New Zealand, at least 137 implement some form of CBEM, in which they track changes in ecosystem health and/or species abundance and distribution (McFarlane, 2024; Peters, Eames, et al., 2015a; Peters et al., 2016). The most common types of monitoring implemented by CBCGs are 5-minute bird calls and photo points, because they are easy to carry out. Peters et al. (2016) suggest that monitoring by CBCGs is constrained by scientific literacy, technical support and the number of willing volunteers. However, there is an increased interest in bird monitoring with high

numbers of translocation proposals by CBCGs, and a desire to increase bird monitoring overall (Parker, 2008, 2013; Peters et al., 2016). Water quality monitoring is also prominent in CBCGs due to public awareness of the widespread decline in freshwater quality (Hughey et al., 2013; Peters et al., 2016). An increased awareness of the need for broader and longer term monitoring in Aotearoa New Zealand, has led to growth in the reliance on CBCGs to carry out monitoring and collect valid data (Lee, McGlone, & Wright, 2005; Sullivan & Molles, 2016).

Conservation in Aotearoa New Zealand is complicated and often involves the management of invasive mammals, and the translocation of native species to protected areas or offshore islands (Department of Conservation & Ministry for the Environment, 2000; Galbraith et al., 2016). Both of these actions include numerous sequences of complex actions and decisions (Galbraith et al., 2016; Miskelly & Powlesland, 2013). Cromarty and Alderson (2013) and Galbraith et al. (2016) argue that many CBCGs are unaware of the complexity of translocations and the issues that can arise. In order to further increase CBEM, DOC and regional councils have a critical role to play to ensure that CBCGs have the knowledge and skills to carry out conservation activities and environmental monitoring (Department of Conservation & Ministry for the Environment, 2000), as without considerable advice and technical support, CBCGs can encounter problems (Galbraith et al., 2016).

Peters (2015) found that the monitoring priorities of CBCGs that carried out CBEM aligned with how they intended to use their data. Most data collected by CBCGs was used to help guide their environmental projects, and their data was often aligned with the requirements of funders for applications and reporting back (Peters, Eames, et al., 2015a; Peters et al., 2016; Peters, Hamilton, et al., 2015). New Zealand CBCGs tend to prioritize data use for educational and social purposes, as many CBCGs have a dual purpose of scientific enquiry and social activity (Byrd, 2008; Hardie-Boys, 2010). Galbraith (2016) and Peters (2016) both found that although many CBCGs do some form of CBEM there is often no comprehensive planning or milestones to demonstrate successfulness or progress. It is argued that having planned CBEM for CBCGs would improve future projects and increase the

likelihood of funding, as many funding agencies require proof of success (Sullivan & Molles, 2016) and having a comprehensive framework and milestones are generally deemed a necessary pre-requisite for an evidence-based review of restorative actions by government agencies (Galbraith et al., 2016).

As discussed above, there is a significant potential for CBCGs to contribute to local, regional and national biodiversity projects and strategies (Peters, Eames, et al., 2015a). In this context, there are many ways that CBCGs can contribute data to larger environmental projects, which range from contributing to scientist-led projects, where volunteers simply contribute data to an already running project, to transformative projects, which are CBCG-led with scientists acting as advisors (Bonney, Cooper, et al., 2009; Conrad & Hilchey, 2011; Peters, Eames, et al., 2015a). CBCGs are able to collect larger amounts of data than government agencies alone and have the potential to supplement government data collection processes (Peters, Eames, et al., 2015a). Peters (2015) shows that CBEM can lead to a significant improvement in ecological knowledge within a community, and encourage relationships between CBCG members, project partners and the wider community. However, research also suggests that in order for this to happen CBCG volunteers need increased support from government agencies to increase their ability to monitor their own projects (Peters, Hamilton, et al., 2015).

1.4 Key concepts underpinning community-based conservation

This section introduces several key concepts that underpin this thesis. First, it defines participation, and discusses the different types of community participation that occur in CBC. Next it examines the importance of community participation and the benefits of including the local community in initial decision-making processes, and fostering relationships between communities, iwi, government, NGOs and local businesses. It then provides a brief overview of the Volunteer Function Inventory and how it has been modified by other studies to provide insight into the motivations of environmental

volunteers. Lastly, it looks at the role of pro-environmental behaviours have on volunteering and volunteer motivations.

1.4.1 Defining participation

Participation is defined in a range of ways within the literature. These definitions range from basic nominal membership of a group to a dynamic interactive process where all stakeholders influence decision making. Lachapelle and Austin (2014, p. 1073) simply define participation as "the act of engaging in and contributing to the activities, processes, and outcomes of a group", and highlight the importance of stakeholder involvement in decision-making, along with Devas and Grant (2003) and Tikare et al. (2001). Devas and Grant (2003, p. 309) argue that "citizen participation is about the ways in which citizens exercise influence and have control over the decisions that affect them". Tikare et al. (2001, p. 3) suggest that "participation is the process through which stakeholders influence and share control over priority setting, policy-making, resource allocations and access to public goods and services".

Some definitions also emphasize that in order for it to be genuine participation there must be equal weight given to all stakeholders. For example, Singh (1992 p.2) argues that "participation is a dynamic group process in which all members of a group contribute to the attainment of group objectives, share the benefits from group activities, exchange information and experience of common interest, and follow the rules, regulations, and other decisions made by the group". Motivation is also an additional key aspect in some definitions of participation. For example, Claridge (2004, p. 20) states that "participation means the involvement of intended beneficiaries in the planning, design, implementation and subsequent maintenance of the development intervention. It means that people are mobilized, manage resources and make decisions that affect their lives". Whereas others discuss varying levels of power or control dependent on roles, "participation is a range of processes through which local communities are involved and play a role in issues which affect them. The extent to which power is shared in decision-making varies according to type of participation" (Claridge, 2004, p. 20).

1.4.2 The importance and benefits of community participation

Genuine participation includes community members in decision-making, to promote the inclusion of the community in issues that may impact or interest them specifically (Lachapelle & Austin, 2014). The involvement of communities in the early-stages of decision-making is argued to increase the participation in and the longevity of local conservation projects, while having positive impacts on local wellbeing (Forgie et al., 2001; New, 2010; Ruiz-Mallen et al., 2015). While there are situations where community involvement may be detrimental to conservation initiatives, overall it is still seen as more effective than approaches which exclude the community (Ruiz-Mallen et al., 2015). Community participation is important as although government agencies set strategies and policies, a high level of community support is required for them to be successful. Therefore, community involvement needs to be encouraged and acted upon (Forgie et al., 2001). The concept of partnerships between community members and stakeholders is becoming more common where organisations, agencies and communities work together as equals, sharing the responsibility and decision-making authority, to achieve unified goals. The main reason for this shift is due to information and communications advancements, leading to the questioning of government and a more assertive public willing to fight for greater participation and empowerment (Forgie et al., 2001).

Fostering partnerships between communities, government, NGOs and local businesses is seen as an important factor in achieving local conservation goals (Forgie et al., 2001). In order to build successful partnerships there is a need to gain the community's trust through good communication, collaborative decision-making, flexibility and a commitment to key mutual conservation issues (Forgie et al., 2001; New, 2010). Partnerships are often established when the local community and external institutions have common visions on how to combat environmental issues in order to improve local conditions. Strong partnerships have been known to promote new conservation initiatives acting as catalysts for community conservation, by supporting local leadership and cohesiveness (Ruiz-Mallen et al., 2015).

Partnerships are also important to pinpoint issues of local importance, so that conservation initiatives and education are relevant to the local community (Forgie et al., 2001).

Community participation in local conservation initiatives is argued to be the most efficient way to preserve environments, decrease habitat fragmentation and increase biodiversity within local areas (Zuo et al., 2016). Although participation in CBC is growing, there is still a need to increase participation and encourage the concept that conservation is everyone's responsibility (Zuo et al., 2016). Forgie et al. (2001, p. 6) argue that the most effective approach to achieve this is collaborative governance, which they define as "collaboration between spheres of government, stakeholders in society, and working in closer cooperation with citizens, not simply representing them". There are a series of factors that are repeatedly identified in the literature as encouraging community participation in conservation initiatives including local involvement in decision-making, environmental education, partnerships with external institutions, economic incentives, and local identity. The involvement of the community in decision-making processes allows their views to be taken into account (Buchy & Race, 2001; Zuo et al., 2016). However, it is important that the process is inclusive, adaptive and ongoing (Buchy & Race, 2001).

Effective community participation should deliver benefits at the local level that enhance motivation for community conservation initiatives. Benefits from community conservation should be shared by all involved groups to increase support for conservation (Simakole, Farrelly, & Holland, 2019). Therefore, initiatives should be developed in a way that benefits the community and other involved stakeholders as well as achieving conservation outcomes (New, 2010). There is also a need for conservation to focus on concepts that the community can identify with personally (New, 2010). Ideally, local initiatives should be designed to reflect local needs, and have goals that align with local ideas and cultures, and should allow for local identification of issues and problem-solving (New, 2010; Zuo et al., 2016). There is an additional benefit of a potential improved relationship between the government and the local community, due to building trust from working together (Buchy & Race,

2001). Greater levels of participation in community conservation has often contributed to increased opportunities for participation, developing community networks and promoting grassroots initiatives and economic incentives such as funding, grants and donations (Forgie et al., 2001; Ruiz-Mallen et al., 2015; Zuo et al., 2016).

Community participation in community conservation also provides opportunities to learn, enabling the foundation for new local skills and knowledge (Forgie et al., 2001; Lindsey & McGuinness, 1998; Phipps, 2011). New (2010) argues that to encourage community participation it is important to provide the community with appropriate information; therefore, environmental education is key. Forgie et al. (2001) agrees that environmental education is essential to provide the community with the knowledge and awareness around environmental issues, which in turn will hopefully lead to a change in attitudes and values and an increase in participation in community conservation. At the same time, the reverse can also occur. CBC initiatives can themselves act as a form of environmental education and contribute to an increase in local awareness and concern for the environment (Borrini-Feyerabend, 1997). There is also evidence that conservation projects tend to have greater success when they incorporate local knowledge, are designed with the community's way of learning in mind, and integrate local values, attitudes and beliefs (Forgie et al., 2001).

Participation also helps to break down barriers between government agencies and the public which can lead to increased co-operation, and trust between and within groups, allowing the achievement of broader, longer term goals by working together (Forgie et al., 2001; Lindsey & McGuinness, 1998; Reed, 2018). Association with a group can also lead to an increase in common interests and a sense of community, which can encourage a commitment to improve local conditions (Phipps, 2011).

1.4.3 The Volunteer Functions Inventory

Although it is well known that environmental degradation is a serious issue, this alone does not motivate the majority of people to become involved in conservation efforts (Forgie et al., 2001).

Rather, there are a variety of factors that motivate individuals to participate in community conservation initiatives which will be explored in detail in Chapter 3. Several studies exploring the motivations of conservation volunteers draw upon the Volunteer Function Inventory (VFI) which considers volunteers' motivations to participate in volunteering generally.

The Volunteer Functions Inventory was developed by Clary et al. (1998) and is a framework for assessing volunteer motivations, based on the belief that individuals may decide to engage in the same voluntary task for different reasons. The VFI assesses six different functions of volunteerism: values, understanding, social, career, protective, and enhancement, as summarised in Table 1.1. The VFI contains 30 items rated on a 7-point response scale and uses a functionalist approach to volunteering, examining the functional motives individuals have for choosing to volunteer. VFI has been used in a range of studies to assess the motivations of individuals in a selection of volunteering activities, due to its ease-of-use and reliability (Allison et al. 2002).

Table 1.1 Description of volunteer motivation functions from the VFI. Source: Clarey et al. (1998).

Function	Description
Values	Expressing or acting on important values, such as humanitarianism and helping those less fortunate
Understanding	Seeking to learn more about the world and/or exercise skills that are often unused
Enhancement	Seeking to grow and develop psychologically through involvement in volunteering
Career	Goal of gaining career-related experience through volunteering
Social	Volunteering allows the person to strengthen one's social relationships
Protective	Volunteering to reduce negative feelings, such as guilt, or to address personal problems

Several studies have adapted the VFI specifically to attempt to better understand the motivations of environmental volunteers. For example, Ryan et al. (2001) examined the relationship between volunteer commitment and motivations in environmental stewardship. They identified five motivational factors, which were influenced by the motivational factors identified by Clary et al (1998) and previous research by Grese et al (2000):

- Learning: using the volunteer opportunity to learn new things about the environment
- Helping the environment: doing something to benefit the environment
- Reflection: volunteering as a chance to reflect and experience a sense of peace
- Social: volunteering to meet new people or see friends and/or family
- Project organization: having the opportunity to work for a programme that is well organized and time efficient

Bruyere & Rappe (2007) also assessed volunteer motivations in environmental volunteers using a modified version of VFI. They identified 7 motivational factors, including four that were the same as Ryan et al. (2001); helping the environment, learning, social, and project organisation, and 3 different motivations including:

- Career: using the volunteer experience to advance at work
- User: to improve an area that is often used for recreation
- Values and esteem: volunteering to live by their values or to feel better about themselves

Both studies found that the top motivation for environmental volunteers was helping the environment, and that other motivations that are significant in other types of volunteering were not as important in the case of environmental volunteering. These studies were used to help identify key motivation factors in my research.

1.4.4 Pro-environmental behaviours

The literature defines pro-environmental behaviour as "purposeful action that can reduce a negative impact on the environment" (Li, Zhao, Ma, Shao, & Zhang, 2019, p. 29), such as recycling, conserving energy and water and participating in CBC. Research into pro-environmental behaviour has rapidly increased in the last few decades reflecting an increase in environmental issues, and public awareness and concern for the environment (Li et al., 2019). Pro-environmental behaviour is researched within a wide range of fields including psychology, geography, environmental planning, natural resources management, sociology, anthropology and political science leading to the identification of a large range of variables that are thought to impact on both environmental attitudes and behaviours (Hines, Hungerford, & Tomera, 1987; Kollmuss & Agyeman, 2002; D. Li et al., 2019; Van Liere & Dunlap, 1981). A multidisciplinary, meta-analysis study carried out by Hines et al. (1987) was able to further pinpoint variables that were strongly associated with pro-environmental behaviours, including knowledge about environmental issues, locus of control, attitudes, commitment, and sense of responsibility. There is also a range of individual factors that have been found to impact pro-environmental behaviour, including demographics, economic factors, social and cultural factors, motivation, environmental knowledge, awareness, values, attitudes, emotion, responsibility, and priorities (Li et al., 2019).

There are a series of studies that examine the relationship between other pro-environmental behaviours, values and intentions and environmental volunteering (DiEnno & Thompson, 2013; Dresner, Handelman, Braun, & Rollwagen-Bollens, 2015; Fornara et al., 2020; Selinske, Coetzee, Purnell, & Knight, 2015; Seymour, King, & Antonaci, 2018). A study carried out by Seymour et al. (2018) found that there was a positive relationship between environmental volunteering and other pro-environmental behaviours in conservation volunteers, over time. This is in line with another study carried out by Dresner et al. (2015) that discovered that other pro-environmental behaviours are positively correlated with frequency of participation in environmental volunteering.

Pro-environmental behaviours can also be influenced by demographic factors and their interaction with external and internal factors (Fransson & Gärling, 1999; Kollmuss & Agyeman, 2002; Toomey & Domroese, 2013). Many environmental programmes promote environmental education as key to increasing awareness to environmental issues, in turn hoping to promote a positive change in environmental behaviours (Chase & Levine, 2018; Jordan, Gray, Howe, Brooks, & Ehrenfeld, 2011; Lawrence, 2010). However, several studies have found that an increase in environmental knowledge does not always translate into the development of pro-environmental behaviours (Bonney, Ballard, et al., 2009; Brossard, Lewenstein, & Bonney, 2005; Chase & Levine, 2018; Toomey & Domroese, 2013), and it is more likely that individuals with other pre-existing pro-environmental attitudes and behaviours will participate in environment volunteering (Chase & Levine, 2018; Ryan, Kaplan, & Grese, 2001; Toomey & Domroese, 2013).

Environmental volunteers are often motivated to contribute to conservation initiatives due to a desire to help the environment (Akin, Shaw, Stepenuck, & Goers, 2013; Alender, 2016; Bruyere & Rappe, 2007; Gratzer & Brodschneider, 2021; Heimann & Medvecky, 2022; Pagès, Fischer, & van der Wal, 2018; Ryan et al., 2001; Thomas, Cullen, O'Leary, Wilson, & Fitzsimons, 2021), and it is therefore possible that environmental volunteering acts to reinforce other pre-existing pro-environmental behaviours and attitudes, through experiences in nature and socialisation with others that have similar environmental views (Chase & Levine, 2018; Toomey & Domroese, 2013). However, environmental education, and conversations around environmental concerns still play an important role, as it has been shown that normalising pro-environmental attitudes and behaviours can provide cues for others to engage in similar behaviours (Fornara et al., 2020; Fransson & Gärling, 1999).

1.4.4.1 Pro-environmental behaviours in Aotearoa New Zealand

Within Aotearoa New Zealand, as worldwide, there is an urgent need to address environmental issues. In order to achieve this there is a need to identify individual actions and choices that lead to an increase in pro-environmental behaviours, such as recycling, conserving energy and water, reducing

consumption, and participating in CBC. Research by Searles (2017) examined the psychological and demographic factors that are thought to predict pro-environmental behaviour, using data from the New Zealand General Social Survey. She concluded that although there was no trend in psychological variables, the highest level of pro-environmental behaviours were found in women, older individuals and individuals with higher levels of education and income. A study by Milfont et al. (2020) investigated the role that national identity played in activating environmental norms and pro-environmental tendencies. They found that having a "clean-and-green attitude" was considered highly important to 89% of individuals in their study, and concluded that environmentalism is a core component of national identity in Aotearoa New Zealand. They argue that national identity is associated with pro-environmental tendencies and actions, and should be used as a pathway to increase pro-environmental collective action. Another study by Milfont, Osborne, and Sibley (2022) was carried out to assess the change in pro-environmental attitudes during the pandemic, due to a shift in public opinion. They used propensity score matching to compare New Zealanders before and after the nationwide lockdowns in 2020. They found an increase in socio-political efficacy, which lead to an increase in pro-environmental attitudes, and satisfaction with the quality of the environment.

The Ministry for the Environment (2018) carried out a series of surveys to attempt to understand how New Zealanders environmental views had changed in light of the Zero Carbon Bill and the mandatory phase-out of plastic shopping bags. This survey covered three key areas: climate change, waste and water. The survey found that 50% of New Zealanders were concerned about the impact of waste, 61% wanted more ambitious emission targets to address climate change, and 82% of New Zealanders wanted improved water quality. However, New Zealanders also stated that they thought the government needed to do more and that they felt they were not personally responsible and were not willing to change their actions to have a positive impact on the environment. Overall, there seems to be a general awareness of the impact of climate change, waste and water, but little or no impact on pro-environmental behaviours that personally address these issues.

The World Values Survey also provides insight into pro-environmental behaviours of New Zealanders (Perry & Yeung, 2021). A representative sample of New Zealanders were asked a series of questions about their pro-environmental behaviours within the past 12 months. It was found that a significant proportion of New Zealanders recycle and choose household products that are better for the environment. However, reducing water consumption for environmental reasons was significantly lower, which is consistent with the survey by the Ministry for the Environment indicating a lack of awareness and/or responsibility for water conservation. Attending a meeting or signing a petition aimed at protecting the environment was the least frequent pro-environmental behaviour. Typically, people involved in this sort of behaviour are engaged in current issues and proactive about action and change, and care about local issues (Searles, 2017). Individuals with other pre-existing pro-environmental behaviours have been found to be more likely to be involved in CBC, and therefore it is important that there is a clear understanding of the role other pro-environmental behaviours play in relation to motivation factors.

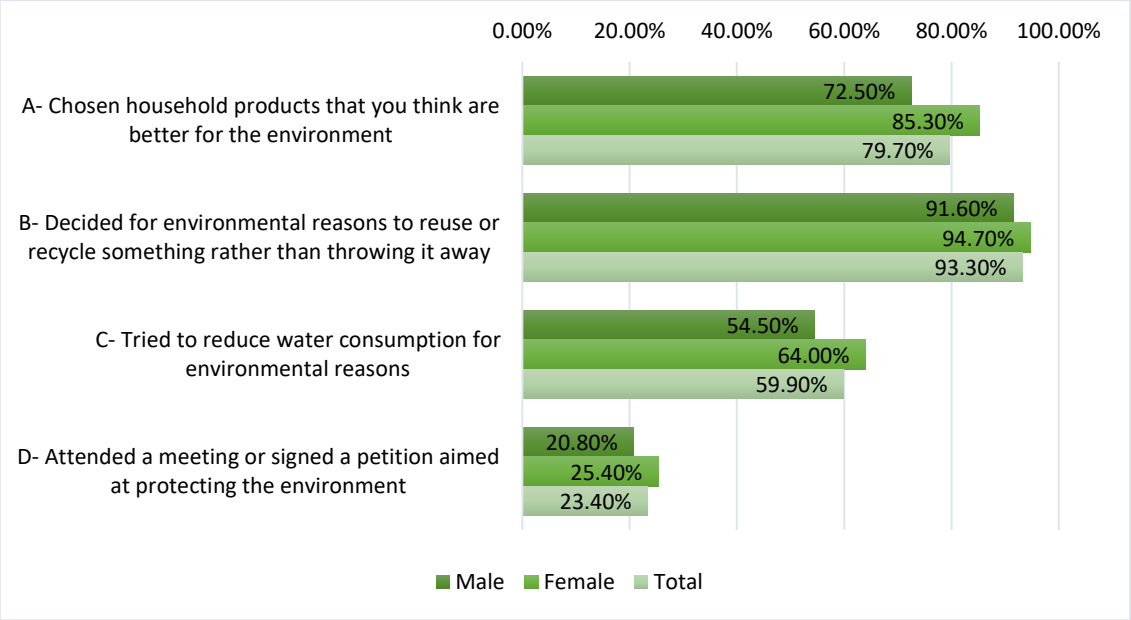

Figure 1.2 Pro-environmental behaviours carried out by New Zealanders as reported in the World Values Survey. Source: Perry & Yeung (2021).

1.5 The need for research

A series of surveys carried out by the Department of Conservation (2016), found that 85% of New Zealanders rated conservation to safeguard native plants and animals and protect the environment for future generations as personally important to them. However, only 12% of those surveyed had actively contributed to conservation in the year prior, with key activities including tree planting, ecosystem restoration and pest control (Department of Conservation, 2016). These findings suggest that the majority of New Zealanders think conservation is important but lack the motivation, information or capacity to actively contribute to conservation.

Literature examining the motivations of CBC volunteers identifies a range of key motivations, which will be explored in detail in Chapter 3. Volunteer motivations have been found to vary between individuals, and change over time, which suggests that volunteer motivations are likely to differ between CBCGs and locations. Participation in CBC can also be influenced by local ideas and cultures, supporting the need for local case studies, particularly in areas that require an increase in conservation initiatives due to limited native habitats (Ruiz-Mallen, Schunko, Corbera, Roes, & Reyes-Garcia, 2015). A case study in the Manawatū region of Aotearoa New Zealand is significant as the region suffers from the very extensive clearing of land and habitat fragmentation historically (Knight, 2013), which is exacerbated by the substantial presence of introduced mammalian predators (Department of Conservation, 2020b). The Manawatū region is in dire need of more conservation initiatives, and a workforce of committed volunteers to help achieve them (Department of Conservation, 2020b). The region's demographic characteristics also sit near the New Zealand average, therefore it is an ideal place for a case study of New Zealand CBC volunteers (McKinnon, 2015; Stats NZ, 2018).

Zuo, Wheeler, and Edwards (2016) argue that although there is extensive literature on environmental values there is still limited knowledge on the promotion of increased engagement with the environment. This research contributes to addressing this gap in the literature. This research also

contributes a addressing a range by research needs identified by previous studies including the need for:

- Qualitative interviews to contribute to the knowledge on volunteer motivations, recruitment and retention, and barriers to volunteering (Asah, Lenentine and Blahna, 2014).
- Expanding the limited knowledge of New Zealand CBC volunteers in order to better support their efforts, and "to ensure New Zealand's rich natural heritage remains a cherished part of the national identity" (Heimann & Medvecky, 2022 p.11).
- Investigating the dynamics of local peoples' motivations (Ruiz-Mallen et al, 2015).

1.6 Thesis structure

This thesis has been prepared as a PhD thesis by publication. As such, the body of the thesis primarily consists of four journal articles. However, Chapter 2 will first outline the data collection methods in detail, including an online investigation of CBCGs in the Manawatū region, 21 semi-structured interviews with key representatives and an online questionnaire of CBC volunteers. Chapter 2 also outlines the ethical considerations associated with the research, how the data was analysed and the limitations of the study.

Chapter 3 consists of a published systematic literature review on environmental volunteering, which identified and synthesised 44 relevant peer-reviewed journal articles. A range of motivational factors of environmental volunteers were identified and discussed, including helping the environment, helping the community, learning, being in nature, and social factors. This chapter also examines barriers to volunteering, volunteer satisfaction and how to recruit and retain environmental volunteers.

Chapters 4, 5 and 6 present the findings of the interviews and questionnaire. Chapter 4 explores the motivations of CBC volunteers in the Manawatū. This chapter discusses CBC volunteer demographics,

initial motivation factors, ways to increase volunteer recruitment and the role of pro-environmental behaviours. Chapter 5 considers volunteer commitment and the longevity of CBC volunteers in the Manawatū, investigating the long-term motivations of CBC volunteers, retention of volunteers and volunteer commitment and satisfaction. Chapter 6 explores barriers and other challenges facing CBC volunteers in the Manawatū. This chapter addresses the barriers and limitations around CBC, the role of CBEM and how to achieve successful CBC outcomes.

Finally, Chapter 7 discusses the implications of the findings in the context of the broader literature. Within this chapter some of the results that were not discussed in the above papers due to journals' word limits are considered. Sections 7.1 to 7.4 address each of the research questions and section 7.5 draws the thesis to a conclusion.

2. RESEARCH METHODS

This chapter describes and discusses the rationale for the research methods used in this study. First, Section 2.1 will describe the data collection methods. Section 2.2 will then discuss ethical considerations. Next, Section 2.3 will describe the data analysis techniques used. Finally, Section 2.4 will discuss limitations of the study. Although an effort has been made to avoid repetition, some of the details below are also included in Chapters 4, 5 and 6 due to the fact that they were written as journal articles.

2.1 Data collection methods

The mixed-methods approach included an initial online investigation of CBCGs in the Manawatū region followed by in-depth semi-structured interviews, and an online questionnaire to collect data about CBC volunteers within the Manawatū region.

2.1.1 Online investigation

A preliminary online investigation was carried out to identify relevant information on CBCGs in the Manawatū region. The ENM, Forest and Bird and the DOC websites were used to identify CBCGs currently active in the Manawatū region. Each of these sites had lists of CBCGs which were carefully examined in order to exclude groups that are not based in the Manawatū or do not have environmental conservation-based objectives. In total twenty-one CBCGs were identified. Many of these groups had websites and/or Facebook pages which provided additional information including contact details for each group. Appendix 1 provides a brief summary of the information collected for each CBCG, and which CBCGs had representatives that were interviewed or completed the questionnaire.

This initial online investigation was an important first step in order to identify the number and size of CBCGs in the Manawatū and the kinds of activities they are involved in. This investigation also allowed

for the formation of a list of contacts and associated contact details for each group. The online investigation also led to a discussion with the co-ordinator of ENM seeking their support to allow access to their volunteers and volunteers associated with their related groups, in terms of sending out emails and placing notices in newsletters.

2.1.2 Literature review

Systematic literature review on environmental volunteer motivations was carried out to provide a structured and rigorous approach for evaluating the literature (Petticrew and Roberts, 2006). For my literature review I followed the 12-step approach developed by Kable et al. (2012) to plan and carry out my review. Two scholarly databases, Scopus and Web of Science, were searched to identify any peer-reviewed research presenting original data about what motivates environmental volunteers to participate in environmental volunteering, and an additional Google Scholar key word search was also conducted to identify any additional relevant papers.

The primary search terms used to search the databases were “volunteer motivations” and “environmental volunteering”. 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 2001-2022. 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.

In total, 44 papers were included in the review. The full bibliographic details for each paper are provided in Appendix 7.

2.1.3 Semi-structured interviews

Semi-structured interviews are commonly used in environmental research as a way to understand people's opinions, values, experiences, aspirations and behaviours in association with the natural world (Fontana & Frey, 1994; Young et al., 2018). They are a form of interview that lies between structured and unstructured interviews and since there are disadvantages of both structured and unstructured interviews, semi-structured interviews tend to be favoured (Young et al., 2018). Structured interviews follow a strict format of pre-determined questions, similar to a questionnaire, and there is no deviating from the order and wording of these set questions. In contrast, unstructured interviews tend to consist of a number of open-ended questions, or a list of topics to discuss, and the interview can change depending on the interviewee's answers or thoughts on the topic (Denscombe, 2014; Sarantakos, 2013). This form of interview is very flexible, has minimal restrictions, allows for self-expression, as well allowing interviewees to speak their mind and therefore tends to work better on complex topics where the interviews are aimed at discovering new ideas (Neuman, 2014; Sarantakos, 2013).

Semi-structured interviews are based on a list of questions or issues, but offer flexibility in the order in which they are discussed, allowing the interviewee to develop ideas and speak more openly and broadly about key ideas of interest than in a structured interview. The scope to modify the interview questions during interviews provided the opportunity to adapt the interviews depending on the role of the interviewee, such as whether the interviewee was a volunteer, a leader or part of an associated group such as ENM or DOC. Questions were added or removed when appropriate, and ideas were covered in great detail or just skimmed over depending on the knowledge and experience of the interviewee (Denscombe, 2014; Sarantakos, 2013).

Semi-structured interviews were undertaken in this study as they are advantageous in collecting more detailed information from a small selection of key people, allowing for more in-depth insights (Denscombe, 2014), into CBC participation. Members of CBCGs may also have experiences and

feelings that they would like to share which couldn't be explored by other methods. They also allow for the correction of misunderstandings, the clarification of questions and the ability to ask more complicated questions (Sarantakos, 2013).

Each CBCG identified from the online investigation was contacted and invited to take part in an interview. These interviews were used to identify key issues in CBCGs and develop a comprehensive understanding of the local CBCGs and their volunteers. Of the 21 CBCGs identified, representatives from 12 groups participated in an interview, along with a representative from the ENM and DOC. In total, 21 interviews were conducted, with more than one representative interviewed from some groups. Multiple emails were also sent to various individuals working for Forest and Bird inviting them to participate in an interview. However, no one from Forest and Bird was willing to be interviewed.

Two sets of interview questions were used, one for CBCG leaders and one for CBC volunteers who were not in a leadership role. The interview questions were based on existing literature and themes identified through a systematic literature review. They included 9 open-ended questions for CBCG volunteers, with an additional 3 questions added for CBCG leaders and other representatives (as outlined in Appendix 2). As mentioned above, these questions sometimes varied as a consequence of the way the interview progressed. Each interview lasted approximately 45 minutes and interviewees were asked about their CBCG and the volunteers participating within their group, along with questions about their own personal motivations for volunteering, what they have experienced as a result of their participation, as well as their perception of the motivations and experiences of others. Limitations, challenges and issues around recruitment and retention were also discussed. The interviews were recorded and transcribed with key themes and quotes identified and summarised. All the interviews provided insights relevant to addressing the research questions and overall aim of the study, providing a deeper understanding of different perspectives on CBC participation. These insights were also used to develop the questions for the questionnaire.

2.1.4 Questionnaire

Questionnaires are a common form of data collection which are used for both qualitative and quantitative research (Neuman, 2014; Ponto, 2015), and are now commonly distributed and undertaken online (Ritter & Sue, 2007). They have some benefits over other forms of data collection including the potential to reach a larger number of respondents, and the possibility of maintaining the anonymity of respondents, meaning a given respondent can't be identified from the data set. They can also be completed whenever the participant has time, and so are less intrusive than other research methods (Denscombe, 2014; Ritter & Sue, 2007; Sarantakos, 2013).

Online questionnaires are low cost and time efficient compared to paper versions, and they are able to collect large amounts of data which are then easily analysed by an online platform. They are also convenient as they can be completed at any time, are easily accessible and can be completed in phases (Ritter & Sue, 2007). However, because the target population was CBCG volunteers in the Manawatū region and CBCG volunteers tend to be older, a paper version was also offered to all potential respondents as well (paper copies were available at the ENM office and via mail by replying to the questionnaire invitation email) to minimise sampling bias to those who did not have access to the internet, or were unfamiliar or uncomfortable with online platforms. The use of a questionnaire provided a means to increase the number of participants in order to obtain more generalizable information about CBC in the Manawatū region, and it had the advantage of being able to sample a large number of individuals, as it was carried out mostly online without personal interaction.

The online questionnaire was created and administered using the online platform Qualtrics™. The questions were developed using the literature reviewed in Chapter 3 and the key themes and issues that were raised during the interviews. The questions for the online questionnaire were revised numerous times with constructive input from my two PhD supervisors. A small pilot study was also carried out to ensure that the questions were clear and easy to understand, and that all questions were relevant to CBC volunteers. Four CBC volunteers engaged in the pilot study, along with four

personal contacts, that had volunteered in the past. All of these individuals were able to provide feedback which led to minor changes in wording and grammar within the questionnaire.

The final questionnaire consisted of 43 questions, including both multiple choice questions and short answer questions as outlined in Appendix 3. It included questions about volunteering details, the demographic characteristics of volunteers, volunteer motivations, commitment and satisfaction, barriers to volunteering, environmental monitoring and attitudes towards pro-environmental behaviours, as well an open-ended question at the end for respondents to share any other thoughts or experiences. The data collected via the online questionnaire provided a well-rounded picture of the demographic characteristics, behaviours, motivations and satisfaction levels of CBC volunteers in the Manawatū region.

Recruitment for the questionnaire was carried out using both targeted and snowball sampling (Denscombe, 2014; Sarantakos, 2013). Initial recruitment emails were sent on October 29th 2021, reminder emails were sent on January 28th 2022 and the questionnaire was closed on February 25th 2022. Recipients of the email received a link to the questionnaire with an invitation to send it on to other volunteers or past volunteers that were willing to participate. The questionnaire invitation included a short summary of the study, a link to the online questionnaire, and an option to have a paper version delivered if required. There was also an offer to have the questionnaire explained in more detail at one of their CBCG meetings, although no one requested further clarification.

The questionnaire had 101 complete responses, including respondents representing 17 of the 21 CBCGs, plus volunteers from DOC and ENM. There were also additional responses from four small CBCGs that were not initially identified in the online investigation and which have been added to the bottom of Appendix 1.

2.2 Ethics

This research was conducted in accordance with Massey University's *Code of Ethical Conduct for Research, Teaching and Evaluations Involving Human Participants.* The Massey University Human Ethics risk assessment checklist was completed to confirm that the project was 'low risk'; a low risk ethics application was submitted and low risks ethics approval obtained.

All interviewees were given a printed copy of the participant information sheet (Appendix 4) prior to their interview which explained what the study was about and outlined their rights as a participant. Their rights were also verbally explained and they were also given an opportunity to ask any questions regarding the study or their participation. Each interviewee signed a consent form (Appendix 5) indicating that they understood the information sheet and consented to have the interview recorded. All recordings and transcripts from the interviews remained confidential and were stored securely in a password protected folder.

Similarly, the first page of the questionnaire clearly outlined the purpose of the study and participants' rights and the first question asked participants to indicate if they consented to participate. This question was a required field, so no respondent could continue unless they answered yes. If the respondent answered no the questionnaire would skip to the end, thanking them for their time.

Since the questionnaire was carried out on an online platform it was important to make sure that the data collected was confidential. The questionnaire was administered using Qualtrics™, which is a surveying platform provided by Massey University. The Qualtrics™ privacy statement was reviewed and deemed acceptable as it does not store any data, but acts as a data controller and transferred the data straight to the user via a password protected account. In order to make sure that the questionnaire remained anonymous respondents were not asked any identifying information about themselves, and no identifying information was included in the publications or final thesis.

2.3 Data analysis

Each interview recording was transcribed and analysed to identify key themes. The identification of themes was guided by the four central research questions, and the key themes that emerged from the systematic literature review. Concepts or issues that were mentioned multiple times by interviewees, and areas of consensus and conflict were also identified and recorded.

The Qualtrics™ platform was used to summarise and analyse key findings within the data collected from the questionnaire. A summary report was created to highlight the key findings of the questionnaire, which was then used to carry out a series of comparisons between demographic characteristics and motivation factors, along with cross tabulations of significant results. Questions from the questionnaire that were addressed in the interviews were also identified and examined to see if there was any correlation between relative factors, mean response and the variation between respondents. This was then used to support or contrast with ideas and concepts that were deemed important by interviewees. Qualtrics™ was also used to create a series of tables and graphs to display the key findings of the questionnaire, which are presented in Chapters 4, 5 and 6. The key demographic characteristics of the questionnaire respondents are also summarised in Appendix 6.

2.4 Limitations

The main limitation of this study is the nature of the sample of questionnaire participants, as there is no sampling frame. Because there is no complete list containing the contact details of all the CBC volunteers in the Manawatū region it was not possible to obtain a random representative sample. Rather, both the interview and questionnaire participants were recruited via purposive and snowball sampling. As such, the volunteers who participated in the interviews and questionnaire may not be fully representative of CBCG volunteers in the Manawatū region. The ENM emailed the invitation to participate in the questionnaire to all the members on their mailing list. However, this list is not an

exhaustive list of all CBC volunteers and not necessarily everyone who received the email from ENM opened the email.

Probability sampling requires knowledge of every individual within the population, as the population acts as the sampling frame and without this it is impossible to achieve a random sample. Probability sampling is also time-consuming and costly. Due to the limited knowledge about the sample population in this case, non-probability sampling was used. Non-probability sampling is often used when it is impossible to draw a probability sample (Denscombe, 2014; Sarantakos, 2013). Nonetheless, the data collected can still provide insights into the trends of CBCG volunteers in the Manawatū region, and what motivates them to be involved in CBC. Comprehensive efforts were made to distribute the questionnaire widely to conservation volunteers in the Manawatū region; an effort was made to make sure all relevant volunteers had access to the questionnaire (e.g. paper and online versions available, emailed volunteers via CBCG contact and through ENM and advertised in the ENM newsletter) and to ensure that there was a range of respondents from different groups and with a wide variety of characteristics within the sample.

Limited funding and time also restricted the study to a more local target population. However, this allowed for a more detailed study of the local population and the ability to visit CBC sites and have in-depth conservations with local people. If more time and money had been available a national questionnaire could have been undertaken. However, it would be broader and possibly miss out on issues of local identity and ideas relating to CBC. It would also be more complex and difficult to identify potential respondents.

The total number of active CBC volunteers within the Manawatū region is unknown, as many CBCGs have a few committed volunteers and then a bigger group of casual volunteers; who may or may not be actively volunteering. However, based on the knowledge gained via interviews with leaders of CBCGs it was clear that on average CBCGs typically have approximately six key volunteers that are

committed and participate regularly along with about 20 casual volunteers that participate sporadically. Therefore, if there are 21 CBCGs each with 6 key volunteers, it is plausible that there is a total of approximately 126 key volunteers and 420 causal volunteers, meaning the total population may be approximately 546 individuals. Therefore, the sample of 101 questionnaire respondents could be approximately 20% of the CBC volunteers in the Manawatū region. There is also a general trend of declining response rates to questionnaires both online and mailed versions, which makes it difficult the obtain large representative samples for research purposes (Eggleston, 2024; Keeter, 2018; Stedman, Connelly, Heberlein, Decker, & Allred, 2019) and therefore approximately 20% is a reasonable number of responses. A response rate and confidence level were unable to be calculated as I did not have a random sample.

The breakdown of the volunteers did seem to show a similar trend to other groupings of CBCGs in other studies. With the combination of data collected from both questionnaires and interviews, the sample group was judged to be sufficient to explore the central research questions of this thesis.

2.5 Conclusion

This chapter described and discussed the research methods used in this study, including how ethical considerations were addressed. It also acknowledges key limitations of the research. The next chapter presents a systematic literature review on the motivations of environmental volunteers, which identifies and explores key themes that will be addressed throughout this thesis.

3. A SYSTEMATIC REVIEW OF ENVIRONMENTAL VOLUNTEER MOTIVATIONS

The first phase of this research was a systematic literature review to synthesise the current understanding of environmental volunteers' motivations, barriers to volunteering, and factors influencing volunteer satisfaction and commitment. This review contributed to addressing research questions 1 and 2 and was also used to help to develop the interview and questionnaire questions for the next phase of this research. This chapter is an article that was published in the journal *Society & Natural Resources* in July 2024. Minor formatting changes have been made to ensure consistency across the thesis. The published version of this article is provided in Appendix 8.

3.1 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 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 successful environmental initiatives.

3.2 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; Hoye at al. 2020; Ruiz-Mallen 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 et al. 2009; O'Brien, et al. 2008; Ruiz-Mallen et al. 2015; TCV, 2021). 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 (Dudley et al. 2009; Hoye et al. 2020; Ruiz-Mallen and Corbera, 2013; Ruiz-Mallen et al. 2015).

The number of community-based conservation groups that rely on environmental volunteers is growing around the world, with governments and non-government organisations increasing their engagement with volunteers to improve their ability to manage natural resources and protect threatened species (Bell, 2003; Conrad and Hilchey, 2011; CVNZ, 2022; Higgins and Shackleton, 2015; Peters et al. 2015). 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 (Bruyere and Rappe, 2007; Higgins and Shackleton, 2015; Peters et al. 2015; TCV, 2021). 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 (McAteer et al. 2021; Tulloch et al. 2013, Tuao Aotearoa, 2023).

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.'s (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; Domroese and Johnson, 2017; Takase et al. 2019).

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 et al. (2001) used a modified version Clary et al.'s (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 (Asah and Blahna, 2013; Frensley et al. 2017; Hvenegaard and Perkins, 2019; Larson et al. 2020; McDougle et al. 2015; Newton et al. 2014; Pagès et al. 2018; Schuett et al. 2014; Turnbull et al. 2020). 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 (Bramston et al. 2011; Frensley et al. 2017; Hvenegaard and Perkins, 2019; Larson et al. 2020; Pagès et al. 2018; Schild, 2018).

Other review papers have focused on specific aspects of environmental volunteering with some studies reviewed 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 et al. (2018, 2020) investigated the link between environmental volunteering and other pro-environmental behaviours' 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.

3.3 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 et al. (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 3.1. The search was conducted sequentially using the search engines and search terms as shown in Table 3.1. 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 2001-2022. 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 co-authors 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 3.1, with any duplicate articles deleted during this process. Each article was given an identification number to make it clear which search terms were found in each article, which are noted in Table 3.1 and Appendix 7. 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 3.1. The full bibliographic details for each paper are provided in Appendix 7.

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 et al. 2008; 2010).

Table 3.1 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	

3.4 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 et al. 2011; Gulliver et al. 2022; Measham and Barnett, 2008; Newton et al. 2014; Thomas et al. 2021; Tulloch et al. 2013; Turnbull et al. 2020) and six from the United Kingdom (Dunkley, 2019; McAteer et al. 2021; O'Brien et al. 2010; Pagès et al. 2018; Sloane and Pröbstl-Haider, 2019; Walker et al. 2021). There were also five papers from studies undertaken in other European countries (Ganzevoort and van den Born, 2020; Liarakou, et al. 2011; Madsen et al. 2021), and two from South Africa (Higgins and Shackleton, 2015; Wright et al. 2015). One study was from Aotearoa New Zealand (Heimann and Medvecky, 2022) and one from Japan (Takase et al. 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 et al. (2019) compared motivations in Austria and Great Britain, McDougle et al. (2015) compared motivations in the United States and South Korea, and Hvenegaard et al. (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) programme 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.

3.4.1 Volunteers' key motivations

Studies on environmental volunteering found that volunteers are motivated by a wide range of factors. For example, Ryan et al. (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 et al. 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 et al. 2018; Schuett et al. 2014), attachment to place or to an organization/project (Dunkley, 2019; Krasny et al. 2014; Madsen et al. 2021), connection to nature (Ganzevoort and van den Born, 2020; Ganzevoort et al. 2017; Krasny et al. 2014; Madsen et al. 2021; Pagès et al. 2018) and contributing to science (Walker et al. 2021).

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 3.1 below. It is also interesting to note that learning-based motivations were most often ranked second by participants. There is also a wide range of motivations ranked third with personal values most often ranked third but never ranked first or second. There is a range of statements that explain each key motivation across the papers (Figure 3.2).

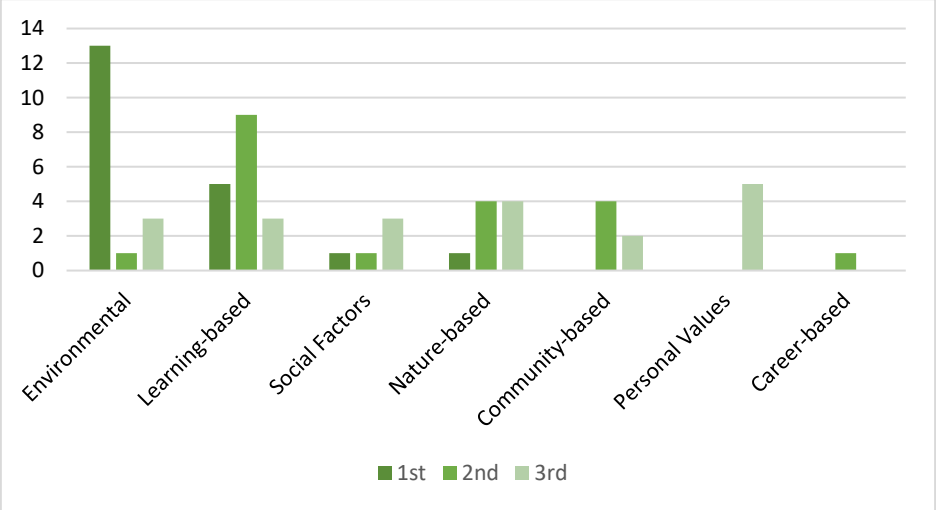

Figure 3.1 Environmental volunteer motivations ranked first, second and third over 20 papers.

As illustrated in Figure 3.1 helping the environment is often identified as the most influential motivation for environmental volunteering (Akin et al. 2013; Alender, 2016; Bruyere and Rappe, 2007; Gratzer and Brodschneider, 2021; Heimann and Medvecky, 2022; Pagès et al. 2018; Ryan et al. 2001; Thomas et al. 2021). This motivation refers to people who volunteer to do something that improves the natural environment (Bruyere and Rappe 2007).

Table 3.2 Examples of statements used to explain key motivations.

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

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 the local natural environment (Akin et al. 2013; Alender, 2016; Bruyere and Rappe, 2007; Dunkley, 2019; Thomas et al. 2021). Volunteers with this motivation often also display other pro-environmental behaviours (Ryan et al. 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) (Bruyere and Rappe, 2007; Ryan et al. 2001). 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 (Alender, 2016; Gratzer and Brodschneider, 2021; Ryan et al. 2001). Akin et al. (2013) and Bruyere and Rappe (2017) suggest managers can encourage volunteers with helping the environment motivations by being intentional in showing volunteers how their effort contributes to conservation efforts and setting goals and tasks around environmental outcomes.

Learning was also often found to be a key motivation for environmental volunteers (Bruyere and Rappe, 2007; Domroese and Johnson, 2017; Gratzer and Brodschneider, 2021; Guiney and Oberhauser, 2009; Johnson et al. 2018; Liarakou et al. 2011; Pagès et al. 2018; Van Den Berg et al. 2009; West et al. 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 et al. 2001; Van Den Berg et al. 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; Guiney and Oberhauser, 2009; Ryan et al. 2001; 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 the

volunteering (Dunkley, 2019; Liarakou et al. 2011; Ryan et al. 2001). 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 (Liarakou et al. 2011; Ryan et al. 2001; Van Den Berg et al. 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 ranking motivation, some studies found learning to be the highest ranked motivation (e.g. Domroese and Johnson, 2017; Guiney and Oberhauser, 2009; Liarakou et al. 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; O'Brien et al. 2010; Pagès et al. 2018; Ryan et al. 2001; Takase et al. 2019; Turnbull et al. 2020; Van Den Berg et al. 2009). 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 et al. 2010; Ryan et al. 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 (Madsen et al. 2021; Ryan et al. 2001). 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 volunteering having a connection to nature (Ganzevoort and van den Born, 2020; Ganzevoort et al. 2017; Guiney and Oberhauser, 2009; Hvenegaard and Perkins, 2019; Pagès et al. 2018). Ganzevoort and van den Born (2020); 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 organisations should consider offering experiences that increase connectedness to nature, and portray their own connection and love for nature when interacting with volunteers (Ganzevoort et al. 2017; Hvenegaard and Perkins, 2019; Krasny et al. 2014; Pagès et al. 2018). Pagès 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 (Alender, 2016; Asah and Blahna, 2013; Ohmer et al. 2009; 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 (Alender, 2016; Ohmer et al. 2009). Volunteering in local areas can encourage relationships between neighbours, 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 (Ding and Schuett, 2020; Pagès et al. 2018; Ryan et al. 2001). 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 (Asah and Blahna, 2013; Hvenegaard and Perkins, 2019; O'Brien et al. 2010; Pillemer et al. 2017). 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 et al. 2010; Mitchell and Popham, 2008; Russell et al. 2013; Zuo et al. 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 et al. 2007; 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 'experience nature').

Personal values and self-esteem were identified by fifteen studies as important motivations for environmental volunteers, with varying amounts of discussion (Akin et al. 2013; Asah and Blahna, 2012; Ding and Schuett, 2020; Hvenegaard and Perkins, 2019; Johnson et al. 2018; Larson et al. 2020; Sloane and Pröbstl-Haider, 2019; Van Den Berg et al. 2009). 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 et al. 2014).

3.4.2 Variation in motivations between individuals

Many studies have found that motivations vary among volunteers (Asah and Blahna, 2013; Frensley et al. 2017; Ganzevoort and van den Born, 2020; Hvenegaard and Perkins, 2019; Larson et al. 2020; McDougle et al. 2015; Newton et al. 2014; Pagès et al. 2018; Schuett et al. 2014; Turnbull et al. 2020) and contexts (Asah and Blahna, 2013; Bramston et al. 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 (Hvenegaard and Perkins, 2019; McDougle et al. 2015; Schuett et al. 2014), 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; Thomas et al. 2021; Woosnam, Strzelecka, Nisbett, and Keith, 2019).

Some studies state that volunteering increases with age up to 60 years old and then decreases (Madsen et al. 2021; Patrick et al. 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 organisations or place (Alender, 2016; Larson et al. 2020; Walker et al. 2021; Woosnam et al. 2019). 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; Walker et al. 2021). 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 (Heimann and Medvecky, 2022; Madsen et al. 2021; Measham and Barnett, 2008). Madsen (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 and Medvecky, 2022; Madsen et al. 2021).

Bramston et al. (2011) argues 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 cantered on self-

knowledge, and self-development) (Clary et al. 1998). It is also important to consider unique cultural contexts, characteristics and values that can play an important role in shaping individuals' decision making (Rahania and Walker 2007). In this context, it is important to understand and consider the full range of potential motivations influencing individual's decision to participate in environmental volunteering, as individual volunteers have different motivations, and may engage in similar activities for different reasons (Bramston et al. 2011; Domroese and Johnson, 2017; Frensley et al. 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 (Ding and Schuett, 2020; Ganzevoort and van den Born, 2020; Tuao Aotearoa, 2023).

3.4.3 Changes in motivations over time

Seven studies described finding evidence that motivations can change and/or develop over time (Bramston et al. 2011; Frensley et al. 2017; Hvenegaard and Perkins, 2019; Larson et al. 2020; Pagès et al. 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 et al. 2011; Larson et al. 2020). Helping the environment, and social factors tend to be stated as key motivations initially (Pagès et al. 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 et al. 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 et al. (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 organisations 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).

3.4.4 Barriers to volunteering

The literature suggests that volunteer-dependent organisations 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 and Medvecky, 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 sixty (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 volunteers 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 et al. 2019). Therefore, it is essential 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.

3.4.5 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 fulfil 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 et al. 2019). A better understanding of motivations could therefore help to promote committed, long-term volunteers (Domroese and Johnson, 2017). People above 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 et al. 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 et al. 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 et al. 2022; Hvenegaard and Perkins, 2019; Newton et al. 2014), ongoing education and training (Frensley et al. 2017; Gulliver et al. 2022; Hvenegaard and Perkins, 2019; Newton et al. 2014), providing clear goals and sharing information freely (Hvenegaard and Perkins, 2019), promotion of socialising and group integration (Ding and Schuett, 2020; Hvenegaard and Perkins, 2019; Laverie and McDonald, 2007; Newton et al. 2014; Pagès et al. 2018; Schild, 2018), recognition of volunteers and providing positive feedback (Gulliver et al. 2022; Hvenegaard and Perkins, 2019) and an emotional attachment to an organization, project or place (Frensley et al. 2017; Laverie and McDonald, 2007; Pagès et al. 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 et al. 2022; Newton et al. 2014; Van Den Berg et al. 2009).

3.5 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 et al. 2015). However, many environmental organisations 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 2001-2022 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, attachment to place and 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 fulfil 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 Aotearoa 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 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.

4. EXPLORING THE MOTIVATIONS OF COMMUNITY-BASED CONSERVATION VOLUNTEERS IN AOTEAROA NEW ZEALAND

The next phase of this research involved undertaking semi-structured interviews and an online questionnaire to investigate the demographic characteristics and the initial motivations of CBC volunteers within the Manawatū region of Aotearoa New Zealand, in order to better understand why individuals, start volunteering and how they can be successfully recruited to participate in community-based conservation. The chapter is currently under review for publication.

4.1 Abstract

Community-based conservation groups play an important role in New Zealand's conservation efforts and have made substantial contributions to local conservation initiatives. However, many community-based conservation groups need more volunteers, so it is important to have a better understanding of what motivates people to participate. This paper explores the demographics and motivations of community-based conservation volunteers and suggests some ways volunteer recruitment could be improved. A case study was carried out on community-based conservation volunteers in the Manawatū region of Aotearoa New Zealand via semi-structured interviews with key representatives and a questionnaire of community-based conservation volunteers. Our research showed that volunteers are typically older and highly-educated. The top motivation factors were "to help the environment" and "to help the local community". In order to increase the number of volunteers it is important to promote volunteering in a range of ways that would encourage, sustain and support a wide range of volunteers.

4.2 Introduction

Volunteers play an important role in conservation in many countries. Some factors contributing to this include limited government budgets for conservation initiatives, an increased awareness of environmental issues, and a desire to help the environment (Conrad & Hilchey, 2011; Halpenny & Caissie, 2003; Peters, Hamilton, & Eames, 2015). Volunteers are crucial for the not-for-profit sector; the positive impact of their work brings an array of benefits to the volunteers themselves as well as society more broadly. These benefits include economic and sustainable development, safer and stronger communities, social inclusion and integration, improved quality of life, and lifelong learning and development of skills (Ockenden, 2007; Smith & Cordery, 2010).

Over one-million New Zealanders participate in volunteering every year, contributing approximately 159 million hours of volunteer labour, and an estimated value of $4 billion annually (Stats NZ, 2018b). It is estimated that there are approximately 2,060 environmentally focused groups in Aotearoa New Zealand including groups that focus on policy change, climate action, nature conservation, the protection and enhancement of green spaces, and promotion of zero waste, water quality and stream health, sustainable food systems, animal welfare, wildlife protection and veterinary services (Stats NZ, 2018b). There are an estimated 940 community-based conservation groups (CBCGs) specifically focused on nature conservation activities (Galbraith, Bollard-Bean, & Towns, 2016; McFarlane, 2024; Peters et al., 2015).

Volunteers play a crucial role in initiating, maintaining and expanding conservation projects in Aotearoa New Zealand (Peters, Hamilton, Eames, Innes, & Mason, 2016; Sullivan & Molles, 2016). Aotearoa New Zealand faces a biodiversity crisis. Since human settlement, 85-90% of native vegetation has been cleared to facilitate agricultural production and urban expansion (Department of Conservation, 2020, 2023). This extensive habitat loss, together with the impact of introduced mammalian predators has contributed to Aotearoa New Zealand having the highest proportion of

threatened species in the world (Bradshaw, Giam, & Sodhi, 2010). Of the species that have been assessed, 94% of reptiles, 90% of seabirds, 74% of terrestrial birds, 76% of native freshwater fish, 46% of vascular plants, 33% of freshwater plants and 25% of marine mammals are either threatened or at risk of being threatened with extinction (Ministry for the Environment & Stats NZ, 2022). Current conservation efforts are focused on planting and maintaining native vegetation, managing invasive weeds, and controlling introduced predators (Craig et al., 2000; Jones & Kirk, 2018).

The scale and complexity of these tasks constrains DOC's capacity to fulfil conservation objectives, particularly outside the protected areas directly managed by the Department. This challenge is further exacerbated by a 21% decrease in its funding over the next three years together with 130 jobs cuts (RNZ, 2024). In this context, volunteers are extremely important in actively contributing to ecological restoration and predator control and there is an ongoing need for more volunteers to participate in community-based conservation (Forgie, Horsley, & Johnston, 2001; Jay, 2005; McNamara & Jones, 2016).

Community-based conservation (CBC) can be defined as a variety of conservation initiatives carried out by unpaid volunteers at the community level, that aim to enhance native biodiversity and have a positive impact on the co-existence of humans and nature (Campbell & Vainio-Mattila, 2003; Ruiz-Mallen, Schunko, Corbera, Roes, & Reyes-Garcia, 2015; Western & Wright, 1994). Over the past two decades' CBCGs have made a significant contribution to habitat restoration, predator control and biodiversity conservation in Aotearoa New Zealand (McNamara & Jones, 2016; Sullivan & Molles, 2016). CBCGs have been particularly successful in urban areas and their surroundings (Clarkson & Kirby, 2016). The number of CBC volunteers in Aotearoa New Zealand is increasing, and their contributions are becoming more important, particularly in helping to slow the decline of indigenous biodiversity (Dickinson et al., 2012; Forgie et al., 2001; Peters et al., 2016).

Previous studies have empirically tested and classified different motivations within an environmental context. Early research into volunteer motivations by Clary et al. (1998) led to the formation of the Volunteer Function Inventory (VFI). The VFI provides a framework to identify and assess key functions hypothesised to motivate individuals to be involved in volunteerism. Ryan, Kaplan, and Grese (2001) adapted and applied a modified version of the VFI to specifically explore the motivations of environmental volunteers. They characterised environmental volunteer motivations in terms of five categories including helping the environment, learning, project organisation, socialising and reflection. More recent studies have identified further categories including helping the community (Akin, Shaw, Stepenuck, & Goers, 2013; Asah & Blahna, 2013; Ganzevoort & van den Born, 2020), being outdoors (Bruyere & Rappe, 2007; Ganzevoort & van den Born, 2020; Hvenegaard & Perkins, 2019; Larson et al., 2020), career advancement (Bruyere & Rappe, 2007; Ding & Schuett, 2020), educating others (Hvenegaard & Perkins, 2019; Pagès, Fischer, & van der Wal, 2018; Schuett, Kyle, Leitz, Kurzawski, & Lee, 2014) and having a connection to nature (Ganzevoort & van den Born, 2020; Krasny, Crestol, Tidball, & Stedman, 2014; Madsen, Ekelund, Strange, & Sølver Schou, 2021; Pagès et al., 2018).

Motivations are complex and tend to be influenced by volunteers' personal characteristics and circumstances (Hvenegaard & Perkins, 2019; McDougle, Handy, Katz-Gerro, Greenspan, & Lee, 2015; Schuett et al., 2014) including age (Ganzevoort & van den Born, 2020; Hvenegaard & Perkins, 2019), level of education (Chase & Levine, 2018; Ganzevoort & van den Born, 2020; Hvenegaard & Perkins, 2019), employment status (Madsen et al., 2021) and prior volunteering experience (Frensley et al., 2017; Thomas, Cullen, O'Leary, Wilson, & Fitzsimons, 2021; Woosnam, Strzelecka, Nisbett, & Keith, 2019). Volunteers can also have multiple motivations and motivations often differ between volunteers (Asah & Blahna, 2013; Frensley et al., 2017; Hvenegaard & Perkins, 2019; Newton, Becker, & Bell, 2014; Turnbull, Johnston, Kajlich, & Clark, 2020).

A desire to help the environment and socialising with others are often identified as key initial motivations by environmental volunteers (Akin et al., 2013; Alender, 2016; Bruyere & Rappe, 2007; Gratzer & Brodschneider, 2021; Heimann & Medvecky, 2022; Ryan et al., 2001). Whereas general volunteers in Aotearoa New Zealand tend to be motivated by being able to "contribute to the community", with 90.4% of volunteers ranking it as their top motivation factor (Stats NZ, 2018b). This suggests that the motivation factors of environmental volunteers may differ from those of volunteers in general and warrant further investigation.

There has also been a recent increase in interest in the relationship between CBC activities (e.g. habitat restoration, predator control and wildlife monitoring) and other pro-environmental behaviours (e.g. recycling, paying for renewable energy, and growing vegetables at home). It is argued that participation in CBC could contribute to an increase in environmental awareness and pro-environmental actions and behaviours. Research exploring participation in CBC the United States and the United Kingdom, has documented changes in CBC volunteer's attitudes towards the environment over time, contributing to positive outcomes for the environment and local communities (Ryan et al., 2001; Seymour, King, & Antonaci, 2018). Ryan et al. (2001) found that environmental volunteers became more likely to plant native plants in their garden, protect natural areas and have a greater connection to nature, over time. Specific volunteer motivations (e.g. helping the environment, and social factors) have also been found to be positively linked with a change in outlook towards the environment and an increase in pro-environmental behaviours (Ryan et al., 2001; Seymour et al., 2018). There have also been studies that have shown that environmental volunteering does not impact pro-environmental behaviours, but does reinforce other pre-existing pro-environmental attitudes and behaviours (Chase & Levine, 2018; Toomey & Domroese, 2013).

In order to recruit and maintain CBC volunteers, CBCGs need to support volunteers and ensure their motivations are fulfilled so that they can continue to support local conservation efforts. This research aims to address three key questions within the context of the Manawatū region of Aotearoa New

Zealand: (1) What are the typical characteristics of CBC volunteers? (2) What motivates individuals to participate in CBC volunteering? and (3) What can be done to increase CBC volunteer recruitment? These questions are explored through a case study on CBC volunteers in the Manawatū region of Aotearoa New Zealand. Twenty-one semi-structured interviews with key members of local CBCGs were carried out and a questionnaire was distributed to all the CBCGs in the Manawatū. This allowed us to gain insight into the motivations and perspectives of CBCG representatives and volunteers.

This research contributes to the growing literature on the CBC volunteer motivations. It also explores the importance of understanding and incorporating volunteer motivations into project design and how understanding motivations can assist with the recruitment of volunteers. In particular, this research seeks to fill a gap in the literature by interviewing and surveying local volunteers in the Manawatū region of Aotearoa New Zealand. The Manawatū region has a significant need for native habitat restoration and protection, due to excessive land clearing, habitat fragmentation and the impact of widespread introduced mammals (Craig et al., 2000; Jones & Kirk, 2018). The region's demographics are close to the New Zealand average, making it a good place for a case study of New Zealand CBC volunteers (McKinnon, 2015; Stats NZ, 2018a). This study also provides insights into general trends in CBC volunteer motivations and discusses possible implications for increasing volunteer recruitment.

4.3 Methods

This paper examines the motivations of CBC volunteers in the Manawatū region of Aotearoa New Zealand. A mixed-methods approach was used including an online investigation of local CBCGs, semi-structured interviews with CBCG representatives and an online questionnaire of CBC volunteers.

The Manawatū region is situated in the lower half of the North Island of Aotearoa New Zealand (Figure 4.1). The Manawatū River is 235 km long with a number of large tributaries including the Oroua, Mangatainoka, Mangahao, Pohangina and Tiraumea (Land Air Water Aotearoa, 2024). The catchment

includes a series of mountain ranges notably the Tararua and Ruahine ranges, along with the tree studded plains that extend between the ranges and the sea. The main population centre is Palmerston North which has a population of just under 85,000 (Stats NZ, 2018c). Smaller towns include Fielding, Woodville, Dannevirke, Pahiatua and Foxton (New Zealand Tourism, 2023).

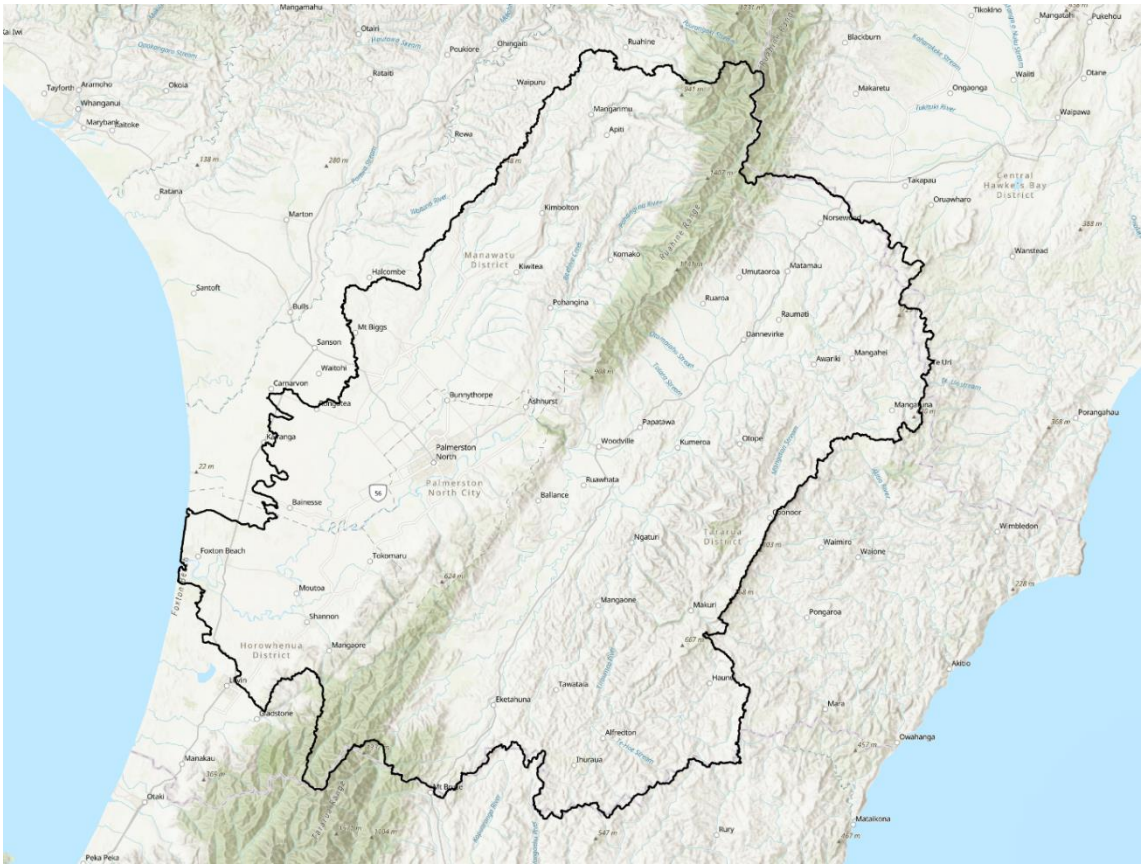

Figure 4.1 Map of the Manawatū region in Aotearoa New Zealand.

The Manawatū is known for its strong agricultural sector (Figure NZ Trust, 2023). It also contains areas of ecological significance, including the Manawatū Gorge Scenic Reserve, and the Manawatū Estuary, an internationally recognised RAMSAR site at Foxton Beach (National Wetland Trust of New Zealand, 2023).

4.3.1 Online investigation

A preliminary online investigation was carried out to identify current CBCGs in the Manawatū region. The Environment Network Manawatū (ENM), Forest and Bird and the Department of Conservation (DOC) websites were used to find all the CBCGs currently operating in the Manawatū region. Each of these websites had lists of CBCGs which were carefully examined in order to identify groups that are based in the Manawatū and have nature conservation-based objectives. In total, twenty-one CBCGs were identified (Appendix 1).

4.3.2 Semi-structured interviews

Each of the 21 CBCGs, ENM, Forest and Bird and DOC were contacted and invited to participate in a semi-structured interview. In total, representatives[5] from 12 groups participated, along with a staff member from ENM and DOC (Appendix 1). Semi-structured interviews were used to gain a comprehensive understanding of the local CBCGs and their volunteers, and explore individuals' motivations to volunteer in CBC.

Twenty-one interviews were conducted between November 2020 and April 2023, with multiple representatives from some CBCGs interviewed. Each interview was approximately 45 minutes and consisted of 9 open-ended questions for CBCG volunteers and an additional 3 questions for CBCG leaders and other representatives (Appendix 2). After obtaining informed consent, interviewees were questioned about their CBCG and volunteers, along with questions about their own personal experiences and motivations for volunteering. They were also asked about their perception of the motivation of other volunteers. Issues and challenges relating to recruitment and retention were also discussed. Each interview was recorded, transcribed, and systematically reviewed to identify key themes, which informed development of the questionnaire.

[5] CBCG representatives had a range of roles within their CBCG including leaders, trustees and members.

4.3.3 Questionnaire

Data was collected via an online questionnaire consisting of short answer and multiple-choice questions, with a section at the end for participants to share any other thoughts or experiences. The online questionnaire was created and administered using Qualtrics™ (qualtrics.com); there was also a paper version available via email request or collection from ENM's office. The target population of our questionnaire was individuals who volunteer for CBCGs in the Manawatū region of Aotearoa New Zealand. The intention of the study was not to survey the whole population of the Manawatū region. Respondents had to have been involved in a CBCG and volunteer in the Manawatū area in Aotearoa New Zealand. Informed consent was obtained from all research participants by providing a short summary of the study and participants' rights and requiring participants to indicate that they understood their rights before entering the questionnaire itself.

The questionnaire was designed to provide a well-rounded picture of the characteristics, motivations, and satisfaction level of Manawatū CBC volunteers. Prior to conducting the questionnaire, a small pilot study was carried out to ensure that the questions were relevant, clear and easy to understand. Four CBC volunteers engaged in the pilot study, along with four personal contacts that had volunteered in the past but did not have a scientific background. Recruitment for the questionnaire was carried out using both targeted and snowball approaches to sampling (Denscombe, 2014; Sarantakos, 2013). Volunteers were reached via an email with a link to the questionnaire sent from ENM to all its active members; an advertisement was also placed in their October 2021 newsletter. Each CBCG that was identified in the online investigation was also sent the same email (with a link to the questionnaire) to their listed contact email on the same day.

Initial recruitment emails were sent on October 29th 2021; reminder emails were sent on January 28th 2022 and the questionnaire was closed on February 24th 2022. Recipients of the email received a link to the questionnaire with an invitation to send it on to all their volunteers and past volunteers. The questionnaire invitation included a short summary of the study, a link to the online questionnaire,

and an option to have a paper version delivered to them if required. The questionnaire had 101 respondents, representing seventeen of the twenty-one CBCGs identified in the online investigation, plus respondents from ENM and DOC (Appendix 1). There were also respondents from four additional CBCGs that were not identified in the online investigation. Therefore, twenty-one CBCGs were represented in the questionnaire. Respondents had the option to skip questions, so not all respondents answered every questions.

The questionnaire consisted of 43 questions, which covered volunteering details, demographics of volunteers, motivations towards CBC, commitment and satisfaction, barriers to volunteering, environmental monitoring and attitudes towards pro-environmental behaviours.

The questions on the motivations of CBC volunteers used a 5-point Likert scale, where respondents ranked specific motivations from “very important to not important”. There were 12 motivation factors, and an option to add additional factors if applicable. These 12 motivational factors were intentionally identified from the literature (e.g. Asah & Blahna, 2012, 2013; Bruyere & Rappe, 2007; Ganzevoort & van den Born, 2020; Ryan et al. 2001), and their importance was confirmed in the interviews.

4.3.4 Limitations

A key limitation of this research is that we were unable to obtain a random representative sample. This is because the total number of CBC volunteers in the Manawatū is unknown and there is no list of current volunteers from which to select a random sample. As such, our approach was to try to reach as many CBC volunteers as possible using the strategies outlined above, including sharing the online questionnaire as widely as possible and making a paper copy of the questionnaire available to volunteers who might prefer to participate offline.

4.4 Results

4.4.1 Demographics of CBC volunteers

Of the volunteers that completed the questionnaire 53% were female, 46% male, and 1% non-binary. There was a wide age range among the volunteers, with over 50% aged 60 or older and only 14% aged under 29. Interviewees often mentioned that older volunteers were looking for local activities that were meaningful:

> For me it's about feeling purposeful, I don't want to fill in time I want to do something that matters (CBCG volunteer).
>
> Retired people look for something to get involved in that is bettering the town (CBCG leader).

There was also a desire to rectify and restore local green spaces for the benefit of future generations:

> They [volunteers] want to leave what they've enjoyed. They want the next generation to enjoy that too and unless we advocate for something it's not going to be there (CBCG trust member).

The volunteers tended to have a high level of education: the majority (85%) of volunteers had some form of tertiary education (Figure 4.2).

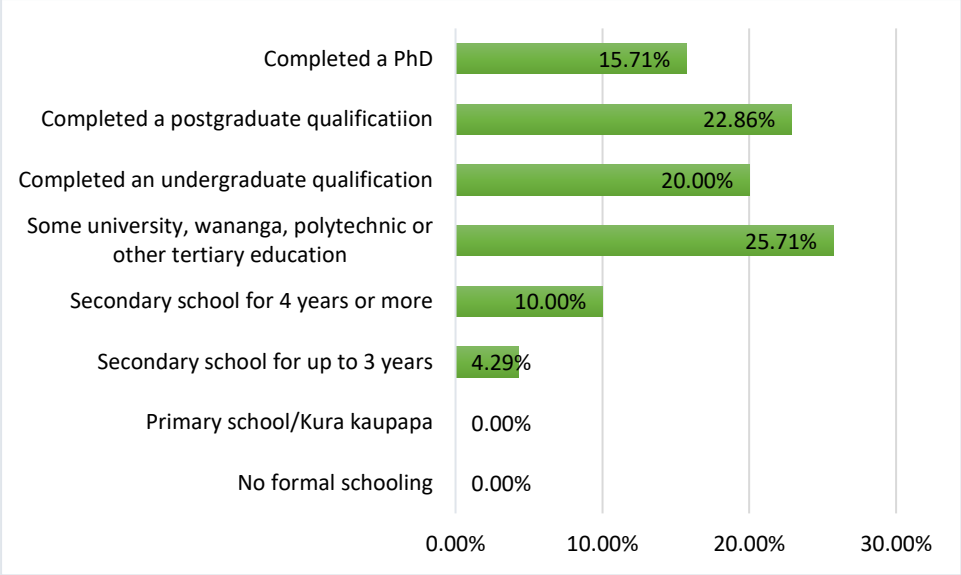

Figure 4.2 Highest level of formal education held by questionnaire respondents (N=81).

CBC volunteers in the Manawatū had much higher levels of formal education compared to the general population in the Manawatū and Aotearoa New Zealand, with nearly 16% completing a PhD compared to 1% in the Manawatū population and 0.8% of New Zealanders. Post-graduate and under-graduate degrees were also more common in CBC volunteers in the Manawatū (Stats NZ, 2018a). Interviewees tended to be aware that a high proportion of their volunteers were well educated:

> In Palmerston North we certainly have a huge proportion of well-educated volunteers especially in the retired space. Saying that, I think we are starting to see more people of all walks of life connecting as we have relevant themes (CBCG coordinator).

The largest group of questionnaire respondents were retired (47%), followed by those in paid employment of less than 30 hours per week (21%) then those in paid employment of 30 hours or more per week (18.6%). There was also a small proportion of students (9%) and those who were unemployed (4%). This differs from the general population in the Manawatū, with 52% in full-time employment, 15% in part-time employment, and 34% not in the labour force, which includes individuals that are studying, retired and unemployed (Stats NZ, 2018a).

4.4.2 Initial motivations of CBC volunteers

A key theme in the interviews was that volunteers were motivated by the desire to restore a local green space, and to improve the local environment including:

> To remediate the harm that's been done to our town as a result of the loss of what is primarily the main environmental taonga6 that we have got in our town our river (CBCG trust member).
>
> The estuary is under threat, so our greatest concern is the advocacy for the retention of what is already there (CBCG trust member).
>
> Some (volunteers) like the idea that it's a remediation project and sort of that, returning the land back to how it was (CBCG leader).

Interviewees often mentioned that they had previous experiences in nature, or an interest in the environment prior to starting CBC volunteering:

> I just love the bush, I've been tramping for years and years (CBCG employee).
>
> I've always had a keen environmental interest (CBCG leader).
>
> I have always had an interest in nature studies as a kid through to professionally (CBCG member).

Building relationships and helping the local community was also mentioned by a few interviewees as a key reason they started CBC volunteering:

> Getting people out and meeting their neighbours and building that community side of things (CBCG leader).
>
> Bringing people together is a big part of what we do… Diverse, intergenerational, interracial, everyone, all ages (CBCG leader).
>
> It became apparent that there needed to be some community action. I've remained involved ever since because I think if the work needs to be done and if you've got those skills that are needed than you do have a responsibility to use your skills for the betterment of your community (CBCG leader).

[6] Taonga means "treasure, anything prized - applied to anything considered to be of value including socially or culturally valuable objects, resources, phenomenon, ideas and techniques" (Moorfield, 2024).

This was identified as especially important within CBCGs that were located in low socio-economic areas in Palmerston North:

> The volunteers are there because they just want to make a difference for the area, knowing how economically deprived this area is. We have got people living here that will never get the opportunity to actually go to the real bush, they just don't have the resources to go. It just means it's there and they can enjoy it (CBCG leader).

One CBCG even had a partnership with the local prison and community corrections department:

> They did a great job. It was a win-win for us. Those guys were needing work experience and we needed people that were young, fit and could do that kind of work (CBCG leader).

Some CBCGs also had connections to local schools and universities, engaging school and university students as volunteers:

> Being a university city we get lots of university students coming through. All the zoology students and vet students (CBCG employee).

The four motivations that were identified as most important were "to care for the environment", "to help the local community", "to connect with nature" and "to be outside, or amongst nature". The three motivations that were identified as the least important on average were "to advance my career", "for stress relief or escape" and "to get exercise" (Table 4.1).

Table 4.1 Motivation factors and corresponding mean (1= not important to 5= very important), standard deviation and variance of questionnaire respondents (N=88).

Motivation factor	Mean ($\bar{x}$)	Standard deviation	Variance
To care for the environment	4.51	0.92	0.86
To help the local community	3.99	1.2	1.44
As a connection to nature	3.92	1.24	1.53
To be outside, or amongst nature	3.91	1.3	1.68
To learn new skills, or knowledge	3.64	1.26	1.6
To educate others	3.18	1.42	2.02
For personal growth	3.07	1.35	1.82
To be involved in a well-run project	3.03	1.31	1.71
To socialize with others	2.83	1.27	1.61
To get exercise	2.55	1.26	1.58
For stress relief or escape	2.36	1.27	1.61
To advance my career	1.73	1.19	1.41

"To help the environment" and "to help the local community" were highly ranked by most age groups. "To advance my career" has the lowest rankings overall, being the most important to individuals under 29 years old (Table 4.2). Males ranked "to educate others" (Female= 2.6 Male= 3.2), and "to help the

local community" (Female= 3.7 Male= 4.4) slightly higher than females. All other motivation factors have only minor differences in average when analysed by gender.

Table 4.2 Motivation factor means by questionnaire respondents age group (N=81).

Motivation factor	<29	30-49	50-59	60-69	70+	Mean ($\bar{x}$)
To care for the environment	3.94	4.82	4.73	4.43	4.89	4.51
To socialize with others	2.69	3.13	2.20	2.55	2.96	2.83
To get exercise	2.44	2.58	2.20	2.61	2.84	2.55
To be outside, or amongst nature	3.94	4.52	3.80	3.66	4.17	3.91
To learn new skills, or knowledge	4.06	3.63	3.10	3.31	3.72	3.64
To advance my career	2.88	2.23	1.40	1.10	1.09	1.73
To be involved in a well-run project	3.25	2.82	2.00	3.13	3.54	3.03
For stress relief or escape	3.06	3.07	2.70	1.90	2.20	2.36
To educate others	2.75	2.87	3.00	3.22	4.00	3.18
For personal growth	3.63	3.27	2.60	2.45	3.00	3.07
As a connection to nature	3.38	4.40	3.60	3.76	3.55	3.92
To help the local community	4.06	3.75	3.36	4.41	4.43	3.99

"To care for the environment" was ranked highly across all employment categories. "To help the local community" also had quite high rankings, along with "as a connection to nature"; both groups were ranked lowest by students and highest by retired and full-time groups. "To advance my career" had the most variation across employment categories (Table 4.3).

Table 4.3 Motivation factor means in relation to employment status (N=81).

Motivation factor	Full-time	Part-time	Unemployed	Student	Retired	Mean ($\bar{x}$)
To care for the environment	4.85	4.44	3.75	4.00	4.73	4.51
To socialize with others	2.54	3.88	2.36	2.83	3.34	2.83
To get exercise	3.08	2.54	1.67	1.83	2.84	2.55
To be outside, or amongst nature	4.46	1.92	1.42	3.17	4.03	3.91
To learn new skills, or knowledge	3.46	3.58	2.02	4.17	3.78	3.64
To advance my career	1.69	3.58	1.89	3.33	1.10	1.73
To be involved in a well-run project	3.00	2.17	0.55	3.33	3.48	3.03
For stress relief or escape	2.92	2.79	1.74	3.00	1.97	2.36
To educate others	3.15	2.13	0.98	2.50	3.47	3.18
For personal growth	3	2.13	1.73	2.67	3.06	3.07
As a connection to nature	4.23	2.58	1.53	2.83	4.09	3.92
To help the local community	4.31	3.42	2.05	3.17	4.39	3.99

When highest level of education is compared to motivation factors “to care for the environment” was ranked comparatively high overall. Whereas, “to advance my career” had lower rankings overall (Table 4.4).

Table 4.4 Motivation factor means in relation to highest level of formal education (N=81).

Motivation factor	Secondary	Tertiary	Undergrad	Postgrad	PhD
To care for the environment	4.79	4.6	4.2	4.5	4.9
To socialize with others	3.64	2.7	2.1	3.4	2.9
To get exercise	3.76	2.4	2.6	2.1	2.6
To be outside, or amongst nature	4.55	3.2	4.3	3.6	4.6
To learn new skills, or knowledge	3.81	3.7	3.9	3.3	4
To advance my career	1.17	1.6	2.1	1.8	1.3
To be involved in a well-run project	3.31	3.5	3.1	2.8	3.3
For stress relief or escape	3.07	2.5	2.6	1.9	2.4
To educate others	3.75	3.7	2.5	2.8	3.6
For personal growth	3.61	2.5	3.3	3	3.5
As a connection to nature	4.33	3.4	4.2	3.6	4.6
To help the local community	4.33	4.2	3.5	4.1	4.4

4.4.3 Pro-environmental behaviour

In response to the question "how much has your behaviour/views towards the environment changed since you began volunteering?" 36% of participants stated that they had no environmental behavioural change since starting volunteering and only 16% stated that they had a big change (Figure 4.3).

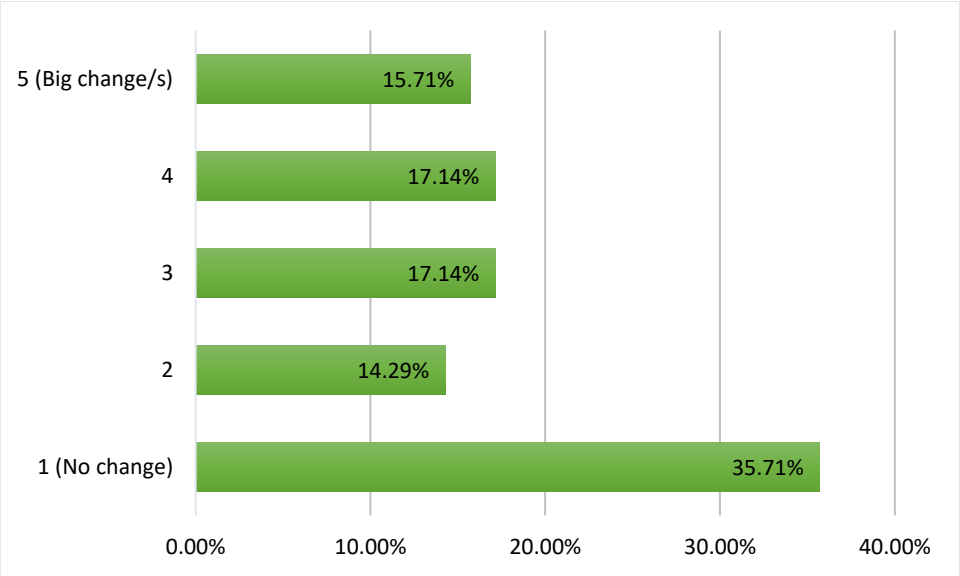

Figure 4.3 Proportion of respondents' perception of behaviour change toward the environment since beginning to participate in community-based conservation (N=81).

4.5 Discussion

4.5.1 Demographics of CBC volunteers

Our results showed that CBC volunteers are typically older and have a higher level of education than the general population which is in line with other studies investigating CBC, environmental volunteering and citizen science. For example, Chase and Levine (2018) found that volunteers in the United States, have a higher level of education, are older and more affluent than the general population. Another study carried out by Heimann and Medvecky

(2022) on New Zealand environmental volunteers found similar trends with questionnaire respondents being older, highly educated and in many cases retired.

The median age of CBC volunteers in the Manawatū is considerably older than the median age of the general population, and a high proportion of questionnaire respondents were retired. There is a growing number of retirees who generally have spare time and often want to be involved in something that has a purpose (Pillemer et al., 2017), this concept was also mentioned by interviewees in our study. With the growing number of retirees in Aotearoa New Zealand, a targeted approach to recruit more retirees could lead to an increase in CBC volunteers and have significant positive impacts on the environment. Volunteering in old age, in particular environmental volunteering has been proven to benefit volunteers physical and mental health. Studies have shown that these positive health benefits are due to a range of factors including being in nature, getting physical exercise, socialisation, and doing something positive for future generations (P. W. Chen, Chen, Huang, & Loh, 2022; Ding & Schuett, 2020; Pillemer et al., 2017). The concept of generativity[7] was mentioned a few times by interviewees, as being an important part of why they volunteer. CBC volunteers stated that they wanted future generations to be able to experience nature the way they were able to, such as swimming in local streams and rivers.

CBC volunteers in the Manawatū are typically highly educated, which is consistent with other studies that had high proportions of highly educated volunteers (Chase & Levine, 2018; Heimann & Medvecky, 2022; Measham & Barnett, 2008). Previous studies have concluded that higher levels of education are likely associated with larger social networks, more

[7] Generativity is a concern for establishing and guiding the next generation.

resources (e.g. higher income) and an increased awareness of environmental issues. Larger social networks mean that these individuals are not only more likely to be encouraged to volunteer, but supported to volunteer by peers with similar values (Chase & Levine, 2018; Heimann & Medvecky, 2022; Measham & Barnett, 2008). An increase in environmental awareness means that these individuals often volunteer for altruistic reasons, or to reduce feelings of guilt (Heimann & Medvecky, 2022; Measham & Barnett, 2008). Studies have also shown that one of the key demographic factors that impacts environmental concern is level of education. Individuals with a higher level of education often have higher incomes and better overall health, therefore it is easier for them to meet their basic needs giving them excess time and energy to contribute and focus on other issues (Fransson & Gärling, 1999; Nord, Luloff, & Bridger, 1998; Van Liere & Dunlap, 1980). Therefore, it is understandable that there is a high proportion of highly educated individuals volunteering for CBCGs and that a higher level of education can lead to an increase in the likelihood of CBC volunteering.

4.5.2 Initial motivations of CBC volunteers

"To care for the environment" was identified as the most important motivation factor by CBC volunteers in the Manawatū, which is unsurprising given that it was found to be the top motivation factor for CBC and environmental volunteers in a range of similar studies (e.g. Akin et al., 2013; Alender, 2016; Bruyere & Rappe, 2007; Gratzer & Brodschneider, 2021; Heimann & Medvecky, 2022; Pagès et al., 2018; Ryan et al., 2001; Thomas et al., 2021). "To care for the environment" is identified in a range of ways in other studies such as, a concern for the environment, to help restore or enhance a natural area, to support conservation efforts in a natural area, and the desire to protect a natural area for personal enjoyment and/or for the enjoyment of future generations (Akin et al., 2013; Alender, 2016; Bruyere & Rappe, 2007;

Dunkley, 2019; Thomas et al., 2021). Most interviewees stated an environmental reason for starting CBC volunteering. These included, to enhance an area of native bush, to rectify damage to local streams and waterways, to be involved in a local conservation initiative and to clean up urban streams and their surroundings. It was also very common for CBC volunteers to have interest in the environment and/or positive experiences in nature, prior to CBC volunteering. With this in mind, environmental education and encouraging the respectful use of local environmental areas is likely to increase interest in CBC volunteering. Within the Manawatū, Central Energy Trust Wildbase Recovery Centre does this well. They play a significant role in environmental education for all ages, and have aviaries set up to allow locals to interact with native wildlife, increasing environmental awareness in the general public and allowing them to have positive experiences with native wildlife.

"To help the local community" was another important motivation factor in the Manawatū. Volunteers who consider "helping the local community" important are typically driven by a desire to enhance local areas to benefit others, and to help people in the local community (Alender, 2016; Bruyere & Rappe, 2007; Ohmer, Meadowcroft, Freed, & Lewis, 2009). Previous research has shown that CBC can play an important role in strengthening communities, and can improve community cohesion, connection, safety, and overall development. It can also result in the transformation of run-down urban areas into beautiful green spaces that the whole community can benefit from (Ohmer et al., 2009). A few of the CBCG leaders that were interviewed explained that their key purpose for volunteering was to have a positive impact on the local community, which is also common in other studies investigating environmental volunteering (e.g. Alender, 2016; Asah & Blahna, 2013; Ohmer et al., 2009; Turnbull et al., 2020). In our study, this motivation factor seems to be especially

important in CBCGs that volunteered in low socio-economic areas, where volunteers were typically volunteering to give others in their immediate neighbourhood a green space to enjoy.

Working with local groups and businesses was often mentioned by CBCG leaders in interviews as a way to help achieve conservation goals with limited funds or resources. For example, one local CBCG had partnerships with the local prison, and Community Corrections. This partnership turned out to be beneficial to both groups, as the CBCG got free labour which led to the addition of a walkway over a small wetland and the community workers got to complete their community work and achieve something they were proud of. Other CBCGs were also supported by local businesses who supplied apples and peanut butter for traps, and often businesses had conservation days where they planted trees or cleared weeds for a local CBCG once a year. The inclusion of the local community, including businesses and schools, in CBC is important to improve environmental awareness and strengthen relationships within the local community.

"As a connection to nature" is another key motivation factor to participate in CBC in the Manawatū, as in other similar studies (e.g. Ganzevoort & van den Born, 2020; Guiney & Oberhauser, 2009; Hvenegaard & Perkins, 2019; Pagès et al., 2018). The desire for humans to be connected to nature has been well documented. The 'biophilia hypothesis' is well-known theory first proposed by Wilson (1984) which argues that humans are genetically predisposed to be attracted to nature, and that humans are drawn to and need nature, in part due to our evolutionary history of residing in natural environments. Urbanisation has led to humans having limited access to nature and having to travel further to access green spaces (Zuo, Wheeler, & Edwards, 2016). However, the biophilic need means that it is common for

individuals to seek an interaction with green spaces by engaging in a range of outdoor activities, including CBC. CBC is one activity that allows individuals to satisfy their biophilic needs, along with enhancing local green spaces and encouraging individuals to have experiences in nature (H. M. Chen, Tu, & Ho, 2013; Delavari-Edalat & Reza, 2010; Russell et al., 2013). Connection to nature has been shown to increase volunteer concern for the environment, strengthening volunteers desire to help the environment (Ganzevoort & van den Born, 2020; Guiney & Oberhauser, 2009; Pagès et al., 2018).

Socialising is an important aspect of CBC volunteering, and includes meeting new people, making friends, working with others and attending volunteering events (O'Brien, Townsend, & Ebden, 2010; Ryan et al., 2001). Interestingly, CBC volunteers in the Manawatū identified the motivation factor "to socialise with others" as comparatively less important than other similar studies (Asah & Blahna, 2012, 2013; Asah, Lenentine, & Blahna, 2014; O'Brien et al., 2010; Pagès et al., 2018; Ryan et al., 2001; Takase, Hadi, & Furuya, 2019; Turnbull et al., 2020; Van Den Berg, Dann, & Dirkx, 2009). Interviewees also rarely mentioned socialising as a perceived reason for people to start volunteering for their CBCG. However, socialising may have become more important as they continued to volunteer with several interviewees mentioning that social events and catch-ups after working bees were successful in encouraging volunteers to continue volunteering, presumably due to getting to know people better, and building relationships with other volunteers.

The motivation factor that was identified as least important by CBC volunteers in the Manawatū was "to advance my career". Individuals who are influenced by this motivation factor are lead to participate for a range of career-based reasons including to gain work experience, to learn skills that are transferable to the workplace, to facilitate career

advancement, and networking (Asah & Blahna, 2013; Ding & Schuett, 2020; Sloane & Pröbstl-Haider, 2019). Previous studies have stated that this motivation factor is often more important among younger volunteers, who are looking to begin or advance in their career (Bruyere & Rappe, 2007; Gratzer & Brodschneider, 2021). Unsurprisingly, this was shown to be the case in CBC volunteers in the Manawatū as under 29 year olds identified "to advance my career" as more important than older individuals. A study by Alender (2016) also supports this finding with career motivation factors decreasing in importance with age among volunteers in their study. The high proportion of CBC volunteers in our study who are retired and/or aged over 64 would likely contribute to the low importance of this motivation factor overall.

4.5.3 Increasing volunteer recruitment

Our findings suggest that there are a limited number of young CBC volunteers in the Manawatū, even though the region is home to three tertiary education institutions, Massey University, Universal College of Learning (UCOL) and the Institute of the Pacific United New Zealand (IPU). Throughout the interviews there was mention of engaging with primary school children to promote environmental awareness in future generations. However, the inclusion of tertiary students was limited. There is definitely potential for local CBCGs to recruit tertiary students. Some ways of achieving this would be to emphasize the value of volunteering to advance their career, and the ability to learn new valuable skills, especially for students studying relevant fields such as ecology, conservation biology, veterinary science and environmental management. One CBCG has utilised Massey University students and gets plenty of help from students during term time. One downside to student volunteers is that it contributes to high turnover rates, which can lead to an increase in the need for training and recruitment. However, because this is expected it can be anticipated and managed. One possible way to encourage students to participate would be to set up one day each semester for students to come

and ‘try out’ volunteering. During this day local CBCGs would have the opportunity to discuss the benefits of volunteering with the students and ideally some would stick around for regular working bees.

Interestingly, some studies have found that younger individuals are more concerned about the environment, than older individuals. These studies suggest that younger individuals are likely to have been more exposed to environmental issues from a young age due to increased media coverage in recent years, and may therefore be more likely to want to be part of the solution (Fransson & Gärling, 1999; Howell & Laska, 1992; Nord et al., 1998). However, this does not currently seem to translate to an increase in young CBC volunteers. There may be a wide variety of reasons for this. For example, in comparison to older, retired individuals, young individuals may be too busy with young families and work or study to have the time, energy or motivation to commit to CBC volunteering. One interviewee also shared that in their experience the younger generation tended not to be in the mind set of doing something for nothing, and this may in part account for the lack of younger volunteers:

> There was always this example in the generation that went before us of doing for others and I don’t think people get to see that anymore. There’s a bit of a culture now amongst the group that is sort of aged between 20 through to 45ish of “why should I do something if I’m not paid for it?” and that’s something we didn’t used to hear. But to be fair to our young people they are trying to work and balance children and study. Life is quite different to what it was 40 odd years ago (CBCG leader).

Whether or not this is the reason behind the limited number of young volunteers is unclear but promoting volunteering in a way that portrays the benefits to its volunteers may encourage more young people to want to be involved. The breadth of activities CBCGs are involved in is definitely wide enough to attract students and young professionals. CBCGs could provide opportunities for developing skills in social media, politics, economics, education, and even communication. Volunteers with these interests could also greatly benefit CBCGs. A volunteer who has a talent in social media could increase volunteer numbers by using social media to effectively recruit new volunteers, or

obtain support from local businesses. CBCGs are also full of highly educated individuals from a range of disciplines and therefore volunteering could be promoted as a way of networking and creating informal relationships with individuals that are leaders in their field, and could potentially provide job seekers with references. In saying this, different motivations resonate with different individuals so it is important to continue to promote the benefits CBCGs have on the community and environment.

Young families are another group of volunteers that are currently lacking in CBCGs in the Manawatū. When investigating local CBCGs it was extremely hard to find child-friendly volunteering activities. Addressing this gap in volunteering opportunities would require CBCGs to create environments where young children are welcomed. There are some CBCGs in the Manawatū that already do this well, including Central Energy Trust Wildbase Recovery Centre, which has a children's volunteer programme and ENM's Plastic Pollution, which has encouraged children to help with rubbish collection and sorting. Young families are often looking for fun activities to get their children outside and entertained. One-off environmental days or working bees targeting families could be successful if approached correctly. An area set up for young children with supervised conservation-based activities would allow parents to volunteer and volunteers who aren't physically able or choose to, could help mind children. This would mean that parents get a break and can help out, and their children would also hopefully enjoy the experience. There would be challenges associated with implementing this approach, and an umbrella group with paid staff may be required to help ensure health and safety concerns are addressed. However, it could offer more families the opportunity to become involved in CBC and children would see the example their parents were setting and hopefully follow suit in the future.

4.5.4 Pro-environmental behaviour

Globally, biodiversity and conservation issues are becoming important politically, and there is a need to acknowledge the role of people's lifestyles, habitats and behaviours to address these issues (Fornara et al., 2020). There has been a series of studies that have examined the relationships between environmental values, behaviours, intentions and ecological worldviews (DiEnno & Thompson, 2013;

Fornara et al., 2020; Selinske, Coetzee, Purnell, & Knight, 2015), and various models (e.g. Value-Belief-Norm) have been used to understand the role that social-physiological dimensions play in pro-environmental behaviours (Fransson & Gärling, 1999; Stern, 2000; Stern, Dietz, Abel, Guagnano, & Kalof, 1999). Many environmental programmes tend to assume that teaching volunteers about the environment will promote pro-environmental attitudes, leading to a positive change in pro-environmental behaviours (Chase & Levine, 2018; Jordan, Gray, Howe, Brooks, & Ehrenfeld, 2011; Lawrence, 2010).

However, several studies have demonstrated that increased knowledge and awareness about the environment does not necessarily lead to an increased uptake of pro-environmental behaviours (Bonney et al., 2009; Brossard, Lewenstein, & Bonney, 2005; Chase & Levine, 2018; Toomey & Domroese, 2013). A study by Seymour et al. (2018), found a slight positive increase in other pro-environmental behaviours by environmental volunteers. When respondents to our questionnaire were asked about the change in their behaviour towards the environment since they started volunteering, 50% stated they had no or little behavioural change, with only 16% perceiving a big change in their behaviour. Some studies have found that demographic factors interplay with external and internal factors to create incentives or barriers for pro-environmental behaviour change (Fransson & Gärling, 1999; Kollmuss & Agyeman, 2002; Toomey & Domroese, 2013).

In line with our study, Chase and Levine (2018) and Toomey and Domroese (2013) found that many volunteers already have strong pro-environmental attitudes and behaviours, which is consistent with other environmental volunteer studies (Ryan et al., 2001). This is evident through the volunteers' key motivation to start volunteering as a desire to help the environment (Chase & Levine, 2018; Ryan et al., 2001), which was the top motivation factor in our study. Therefore, it is more likely that volunteering in environmental settings acts to strengthen pro-environmental behaviours and attitudes, through experiences and socialisation with others that have similar environmental views (Chase & Levine, 2018; Toomey & Domroese, 2013). However, it is still important to increase the

conversation around environmental issues within the community, as some studies show that normalising pro-environmental behaviours can provide cues for others to engage in similar behaviours (Fornara et al., 2020; Fransson & Gärling, 1999).

4.6 Conclusion

Volunteers are playing an increasingly important role in conservation initiatives, therefore it is important to develop a deeper understanding of CBCGs and their volunteers. We found that CBC volunteers tend to be older, have a higher level of education and are more likely to be retired. The top motivation factor identified in our study was “to help the environment”, followed by “to help the community”. The motivation factor that was ranked the least important was “to advance my career” with part-time workers and students ranking it the most important.

Tertiary students are a large pool of people in the Manawatū region that could be better utilized by CBCGs. This could be achieved by advertising volunteering as a form of work experience where they could learn new skills and have experience to put on their CV; this would promote CBC as something that will benefit them, as well as helping the local community. Retired people make up a large proportion of Manawatū volunteers, so it is important to keep recruiting in this space as well. Many retired people are likely looking for something worthwhile to do, and are often driven by the opportunity to leave the world a better place for future generations. Therefore, it is important to promote the importance of the environment and encourage them by making their contribution to conservation goals extremely clear. There are a limited number of families involved in CBC in the Manawatū; creating working bees or events that welcome young children and are aimed at families could increase volunteer numbers now and in the future. In order for recruitment to make a substantial difference in volunteer numbers we need to promote CBC in a way that resonates with a range of cohorts.

Our study also found that there was little perceived change in pro-environmental behaviours after participating in CBC volunteering, and that most individuals already exhibited strong pro-environmental behaviours prior to volunteering. However, this does differ in other related studies, so there is a need to further investigate what drives pro-environmental behaviours in CBC volunteers. There is also scope for future research into CBC volunteer motivation factors. Studies that investigate changes in motivations over time, and retain committed and satisfied volunteers in the long term would to a great benefit to CBCGs, by identifying strategies to reduce turnover and the need for additional recruitment. There is also a need to examine the reasons why people choose not to volunteer, and to find a way to mitigate barriers to CBC volunteering. The success of many environmental projects is dependent on volunteers, therefore is it important to make sure we promote CBC in a way that attracts, maintains and supports a variety of volunteers.

5. VOLUNTEER COMMITMENT AND LONGEVITY IN COMMUNITY-BASED CONSERVATION IN AOTEAROA NEW ZEALAND

The next step in the research was to attempt to understand why individuals continue volunteering and what influences people become committed volunteers. In order to achieve this, the research investigated the frequency of volunteering, the key motivations of long-term committed volunteers and ways to attract and retain committed volunteers, including the importance of a connection to the place they volunteer or to nature itself. These themes were addressed in the same interviews and questionnaire that was used in the previous chapter. The relevant results are explored in this chapter which was published in *Koituitui: New Zealand Journal of Social Science* in April 2024. The published version of this article is provided in Appendix 9.

5.1 Abstract

Committed volunteers are the driving force of successful community-based conservation initiatives. However, many groups struggle with recruitment and retention of volunteers. This research adds to the limited knowledge on what motivates community-based conservation volunteers to become committed to a conservation initiative, by carrying out a case study on community-based conservation volunteers in the Manawatū region of Aotearoa New Zealand. Twenty-one semi-structured interviews with key members of community-conservation groups were carried out along with a questionnaire distributed to all local community-based conservation groups. This research showed that the key long-term motivation factors are 'to care for the environment', 'to help the local community', 'to be outside, or amongst nature' and to have 'a connection to nature'. There was minimal change between long-term and initial motivation factors, with only three motivation factors increasing in importance; 'to socialise with others', 'for stress relief or escape' and 'to help the local community', and one decreasing in importance; 'to learn new skills and knowledge'. In order to enhance commitment of

volunteers there is a need to take motivation factors into account within project design and management, allow time for socialisation, and provide ongoing training, education and recognition.

5.2 Introduction

Community-based conservation (CBC) involves the participation of the community in a range of natural resource management practices that aim to have a positive impact on the environment (Berkes, 2004; Ruiz-Mallen, Schunko, Corbera, Roes, & Reyes-Garcia, 2015). CBC 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, & Mansourian, 2009; Ruiz-Mallén et al., 2014; Ruiz-Mallen et al., 2015). To achieve successful CBC it is essential to have satisfied, committed volunteers; therefore, it is important to understand volunteer motivations, how they evolve and change over time and how to promote volunteer commitment.

People are motivated to volunteer for CBC for a variety of reasons. Understanding what motivates individuals to volunteer can help support community-based conservation groups (CBCGs), NGOs and government agencies in their efforts to maintain volunteer numbers and achieve conservation goals. Early research into volunteer motivations by Clary et al. (1998) identified six key motivation factors that influence people's decision to volunteer: 'values', the opportunity for individuals to express their 'altruistic and humanitarian concerns for others'; 'understanding', the opportunity to learn new things, use knowledge, or practice skills; 'social', the opportunity to connect with others; 'career', the possibility for career-related benefits; 'protective', in order to reduce guilt over being more fortunate than others; and 'enhancement' the chance for personal growth and development. Research by Ryan, Kaplan, & Grese (2001) and Bruyere and Rappe (2007) identified that in addition to these motivations, environmental volunteers are specifically motivated by 'a desire to help the environment'. Another important factor which motivates some environmental volunteers is 'a connection to nature'. Previous

studies have shown that individuals with past experiences in nature or an attachment to a green space are not only more likely to volunteer but are more likely to become committed volunteers (Gooch, 2003; Laverie & McDonald, 2007; Pagès, Fischer, & van der Wal, 2018; Schild, 2018). New Zealand research, including the Survey of New Zealanders (Ipsos, 2016) and The Public Perceptions of New Zealand's Environment Survey (Hughey, Kerr, & Cullen, 2016) also suggests that the key factors motivating environmental volunteers in Aotearoa New Zealand are 'to protect and enhance the environment' and 'to look after my local area'.

This research addresses four key questions: (1) What motivates CBC volunteers to be committed to a group or project? (2) Do CBC volunteer motivations change over time? (3) Does a personal connection to nature or an attachment to a place enhance commitment? and (4) What can be done to maintain and promote commitment in CBC volunteering? These questions are explored through a case study on CBC volunteers in the Manawatū region of Aotearoa New Zealand. Twenty-one semi-structured interviews with key members of local CBCGs were carried out and a questionnaire distributed to all the CBCGs in the Manawatū to gain insight into the experiences and perspectives of both group leaders and participants. This research contributes to the limited literature on the value and importance of committed long term volunteers for the success of conservation goals. In particular, this research seeks to fills a gap in the literature by interviewing and surveying local volunteers in the Manawatū region of Aotearoa New Zealand, a region with a significant need for conservation initiatives and the restoration of natural habitats.

5.2.1 The importance of volunteers in community-based conservation

The number of volunteers participating in CBC is increasing worldwide (Bramston, Pretty, & Zammit, 2011; Dudley et al., 2009; Frensley et al., 2017; Larson et al., 2020; Ruiz-Mallén et al., 2014; Ruiz-Mallen et al., 2015; Ryan et al., 2001; Shirk et al., 2012). Committed CBC volunteers are essential for many environmental organisations, and pivotal to addressing a number of ecological issues (Bramston et al., 2011; Hvenegaard & Perkins, 2019). The success of environmental initiatives to protect and

restore natural environments are becoming increasingly dependent on CBC volunteers, and many would not exist without them (Bramston et al., 2011; Hvenegaard & Perkins, 2019).

For example, a major current environmental initiative in Aotearoa New Zealand is Predator Free 2050. It is based on an ambitious goal set by the New Zealand government in 2016 to make Aotearoa New Zealand free from introduced predators by 2050, in order to protect native wildlife. The success and momentum of CBCGs in island eradications and mainland predator control inspired Predator Free 2050 and achieving this goal will require unprecedented collaboration between iwi, landowners, government, NGOs and local community groups. Volunteers are of upmost importance if this goal is to become a reality, and therefore the ability to attract and retain committed volunteers is key to its success (Department of Conservation, 2020a, 2021), and to achieving future conservation goals. However, 'the conservation sector has been grossly under resourced for decades by successive government and regional agencies' (Bowen, 2024), and there has been a decrease in environmental volunteers from 2013 - 2018 (Stats NZ, 2018).

In this context, some question whether it is appropriate for the Predator Free 2050 programme to be so heavily reliant on volunteers. Some argue that the programme is extremely expensive and unlikely to be successful because it does not adequately take into account other key drivers of biodiversity loss and species extinction such as habitat fragmentation and habitat loss. While others highlight that its success is completely dependent on the active participation of the public, which will be a challenge especially for people with limited time and opportunity to participate in conservation initiatives (SMC, 2020).

The Department of Conservation (DOC) is aware of this challenge and the importance of public and Māori input and leadership (Department of Conservation, 2020a). DOC acknowledges the importance of community involvement, and that the success of Predator Free 2050 is dependent on contributions from a diverse range of New Zealanders, and a strong social movement. DOC has set up a trust with

the intention of connecting all the people involved and engaging people in their vision of a Predator Free New Zealand. DOC is also supporting CBCGs to carry out predator control in ways that work for them, inspiring volunteers to build on the social movement, and encouraging Māori and local communities to take leadership roles (Department of Conservation, 2020a, 2021). The Public Perceptions of New Zealand Environment Survey in 2019 reported an increase in predator control in people's backyards, volunteer work involving predator control and support for increased predator control (Hughey, Kerr, & Cullen, 2019). This suggests that Predator Free 2050 is having some success on engaging the wider public in predator control. While there is a range of opinions on the success of Predator Free 2050, it widely agreed that getting the public onboard and actively participating is key to its success.

Understanding volunteer motivations is critical for effective volunteer recruitment, retention, and commitment (Geoghegan, Dyke, Pateman, West, & Everett, 2016; Larson et al., 2020). Environmental organisations often have issues with high volunteer turnover and unreliability, leading to a waste of limited resources in recruiting and training new volunteers (Asah & Blahna, 2013; Bushway, Dickinson, Stedman, Wagenet, & Weinstein, 2011; Ding & Schuett, 2020; Higgins & Shackleton, 2015; Larson et al., 2020). Previous studies have found that CBC and environmental volunteers have a range of different motivations which have been shown to be derived from a person's values, the desire for increased understanding and knowledge, social connections, career advancement, self-esteem and personal development (Asah & Blahna, 2013; Frensley et al., 2017; Hvenegaard & Perkins, 2019; Larson et al., 2020; Newton, Becker, & Bell, 2014; Ryan et al., 2001). 'Helping the environment' is often found to be the top motivation factor in environmental volunteering (Akin, Shaw, Stepenuck, & Goers, 2013; Alender, 2016; Bruyere & Rappe, 2007; Gratzer & Brodschneider, 2021; Heimann & Medvecky, 2022; Pagès et al., 2018; Ryan et al., 2001; Thomas, Cullen, O'Leary, Wilson, & Fitzsimons, 2021). The literature outlines a series of reasons for this motivation factor including a concern for the environment, a desire to help address specific environmental issues and wanting to restore or improve

a local greenspace (Akin et al., 2013; Alender, 2016; Bruyere & Rappe, 2007; Dunkley, 2019; Thomas et al., 2021). 'Helping the local community' is another key motivation factor that is driven by two aspects; people that want to protect and enhance local areas that they use and to help others in the local community by enhancing a local area (Alender, 2016; Asah & Blahna, 2013; Bruyere & Rappe, 2007; Ohmer, Meadowcroft, Freed, & Lewis, 2009; Turnbull, Johnston, Kajlich, & Clark, 2020). Having a connection to nature can also motivate people to volunteer for environmental causes and has been found to contribute to a volunteer's desire to help the environment, leading to increased participation and longevity in environmental volunteering (Ganzevoort & van den Born, 2020; Guiney & Oberhauser, 2009; Hvenegaard & Perkins, 2019; Pagès et al., 2018). When volunteers' motivations match the benefits they receive from volunteering they are more likely to be satisfied and participate long-term. Offering volunteers' the opportunity to participate in a variety of tasks that match with common motivations, along with substantial acknowledgement of volunteer contributions is thought to increase volunteer retention and commitment (Bonney et al., 2009; Clary et al., 1998; Frensley et al., 2017; Newton et al., 2014; O'Brien, Townsend, & Ebden, 2010; Ryan et al., 2001).

Motivations of environmental and CBC volunteers vary between participants and often evolve and change over time (Bonney et al., 2009; Frensley et al., 2017; Larson et al., 2020; Ryan et al., 2001). 'Helping the environment' and 'social factors' are often identified as key initial motivations (Pagès et al., 2018; Schild, 2018). Whereas, 'personal experiences', and 'being part of a community', along with being part of a 'well organised project' are identified as key motivations for long-term committed volunteers (Asah & Blahna, 2013; Frensley et al., 2017; Pagès et al., 2018; Schild, 2018). A change in motivations over time can often relate to a change from a passive role to a more active role or leadership position (Bramston et al., 2011; Frensley et al., 2017). Therefore, it is important to provide participants with a variety of tasks which take level of commitment into account and provide participants opportunities to try new things, develop skills and become more involved in project

management (Asah & Blahna, 2013; Bonney et al., 2009; Frensley et al., 2017; Geoghegan et al., 2016; Larson et al., 2020).

Research suggests that volunteer satisfaction and commitment are associated with the ability of an organisation or project leader to be able to fulfil their volunteers' motivations, and provide relevant tasks that increase volunteer engagement (Ding & Schuett, 2020; Domroese & Johnson, 2017; Frensley et al., 2017; Larson et al., 2020; Ryan et al., 2001; Takase, Hadi, & Furuya, 2019). Past studies have highlighted a range of other factors that may have a positive impact on volunteer satisfaction, consequently improving volunteer commitment. Some of the key factors mentioned are effective project management (Ding & Schuett, 2020; Gulliver, Fielding, & Louis, 2022; Hvenegaard & Perkins, 2019), ongoing education and training (Frensley et al., 2017; Gulliver et al., 2022; Hvenegaard & Perkins, 2019), opportunities for social activities (Ding & Schuett, 2020; Hvenegaard & Perkins, 2019; Laverie & McDonald, 2007; Pagès et al., 2018; Schild, 2018), providing volunteers with positive feedback (Gulliver et al., 2022; Hvenegaard & Perkins, 2019), showing volunteers how their work has helped the environment (Ryan et al., 2001), and an attachment to an organisation or place (Laverie & McDonald, 2007; Pagès et al., 2018; Schild, 2018).

5.3 Methods

This paper examines the longevity and commitment of CBC volunteers in the Manawatū region of Aotearoa New Zealand. A mixed-methods approach was used including an online investigation of local CBCGs, semi-structured interviews with key CBCG representatives and a structured online questionnaire of CBC volunteers.

The Manawatū region is situated in the lower half of the North Island of Aotearoa New Zealand (as illustrated in Figure 5.1), with the main population centre of Palmerston North. The region encompasses the Manawatū river catchment, and includes a series of mountain ranges notably the Tararua and Ruahine ranges, along with the tree studded Manawatū plains that run between the

ranges and the sea. The region is known for its strong agricultural sector and contains areas of ecological significance, including the internationally recognised RAMSAR estuary site at Foxton Beach (National Wetland Trust of New Zealand, 2023).

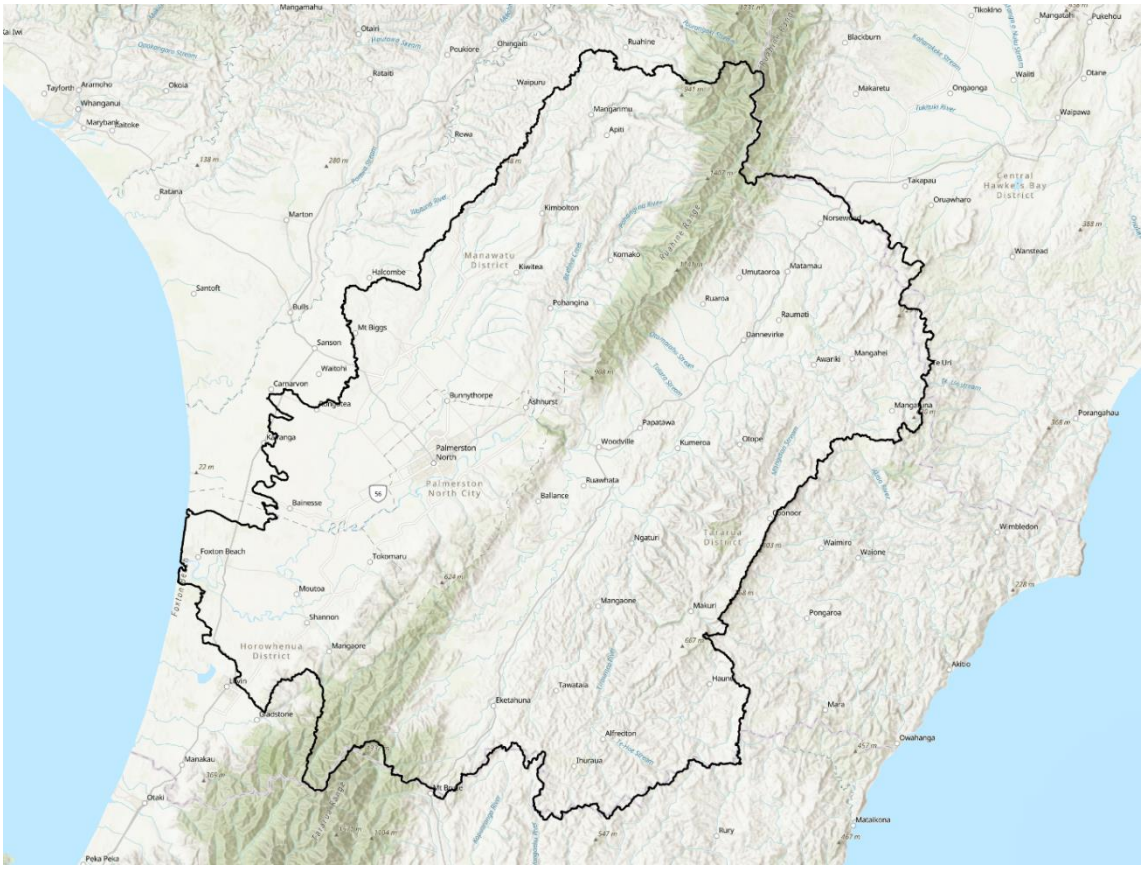

Figure 5.1. Map of the Manawatū region in Aotearoa New Zealand.

5.3.1 Online investigation

A preliminary online investigation was carried out to identify all current CBCGs in the Manawatū region. The Environment Network Manawatū (ENM), Forest and Bird and the Department of Conservation websites were used to find all local CBCGs. Each of these websites had lists of CBCGs which were individually investigated to find all the CBCGs that were based in the Manawatū and have conservation based objectives. Twenty-one CBCGs were identified and Appendix 1 provides a brief

summary of each CBCG. These CBCGs carry out a range of tasks including weeding, predator control, native plantings, growing native plants, habitat restoration, education, advocacy, and litter collection.

5.3.2 Semi-structured interviews

Semi-structured interviews were used to gain a thorough understanding of the local CBCGs and their volunteers. Initial interviews were also used to get a sense of key issues in order to develop the questionnaire. Each of the CBCGs found in the online investigation and ENM, Forest and Bird and DOC were contacted multiple times and invited to participate in a semi-structured interview; of these, 19 CBCG representatives from 12 CBCGs participated, along with a representative from ENM and DOC. A total of 21 interviews were conducted between November 2020 and April 2023, including multiple representatives from some CBCGs.

The interviews were approximately 45 minutes and consisted of a series of open-ended questions; 9 questions for CBCG volunteers, with an additional 3 questions for CBCG leaders and other representatives (as outlined in Appendix 2). The questions related to their CBCG and volunteers, along with questions about volunteer motivations, recruitment and the retention of volunteers. Interviews were recorded, transcribed and analysed for key themes.

5.3.3 Questionnaire

An online questionnaire was also carried out consisting of 43 short answer and multi-choice questions, which covered volunteering details, demographics of volunteers, motivations for volunteering, commitment and satisfaction, barriers to volunteering, environmental monitoring and attitudes towards pro-environmental behaviours. There was also an open ended question at the end for participants to share any other thoughts or experiences.

Targeted and snowball approaches to sampling were used to recruit volunteers to complete the questionnaire (Denscombe, 2014; Sarantakos, 2013). Volunteers participating in CBC within the

Manawatū region were reached via an email sent from ENM to all its active members; an advertisement was also placed in their October newsletter in 2021 and the 21 CBCGs that were identified in the online investigation were also sent the same email to their listed contact email on the same day. Initial recruitment emails were sent on October 29th 2021; reminder emails were sent on January 28th 2022 and the questionnaire was closed on February 24th 2022. Recipients of the email received a link to the questionnaire with an invitation to send it on to all their volunteers. The questionnaire invitation included a short summary of the study, a link to the online questionnaire, and an option to have a paper version delivered to them if required. The online questionnaire was created and administered using Qualtrics™ (qualtrics.com); and the paper version was available via email request or collection from ENM's office in Palmerston North.

The questionnaire had 101 respondents, representing 17 of the 21 CBCGs identified in the online investigation, additionally there were responses from ENM, DOC and 4 small CBCGs that were not identified in the online investigation.

5.4 Results

5.4.1 The need for committed volunteers

Many interviewees argued that there was a need for more volunteers, particularly more committed volunteers. Several CBCG leaders explained that their group had enough volunteers on paper but needed more volunteers that participate regularly and are able to complete tasks with little or no instruction:

> There's always a need for more volunteers, committed volunteers (CBCG leader).

> There's a need for people who are going to put the time in and can help quite a bit with the momentum rather than just hands to plant plants (CBCG key representative).

> There's also a need for volunteers because it's about splitting up the jobs, so there's actually less pressure on people and you can do more of something. But you have to find the right people (CBCG board member).

Interviewees also discussed the need for volunteers that were willing to do undesirable tasks:

> It's very easy to get plenty of people out to plant plants, it's extremely hard to get the same number of people out to free them up for the next four years amongst the blackberry and tall grass (CBGC key representative).

They also highlighted the need for more volunteers willing to take on leadership roles and capable of taking responsibility for the operation of the CBCG when necessary:

> There are not enough people wanting to lead (CBCG leader).

> Succession is a big issue with volunteer groups for sure. The energy of one or two people is critical (CBCG trustee).

5.4.2 Demographics of CBC volunteers

Volunteers who completed the questionnaire tended to be older, highly educated and either retired or in less than full time employment. There were slightly more females than males with 53% female, 46% male, and 1% identifying as non-binary. There was also a wide age range among the volunteers, with a high proportion of older individuals; 14% of respondents were aged under 29, 7% aged between 30-39, 9% aged between 40-49, 16% aged between 50-59, 24% from 60-69 years and 30% aged 70 and over. The volunteers also tended to have a high level of education with 14% completing secondary school and 85% of volunteers having some form of tertiary education, including 16% having a PhD. The largest group of respondents were retired (47%), followed by those in paid employment for less than 30 hours per week (21%) and those in paid employment for 30 hours or more per week (18.6%). There was also a small proportion of students (9%) and those who were unemployed (4%).

5.3.3 Frequency and commitment of volunteers

Questionnaire respondents had volunteered in CBC activities from a few months to over 40 years, with the highest proportion of respondents having volunteered between 1 and 5 years (41.9%), and the smallest proportion for 16-20 years (5.4%). There was also a range of volunteering frequency with the highest proportion of respondents volunteering more than once a week (34.6%), followed by monthly (20.5%), weekly (18.0%), fortnightly (10.2%) and a few times a year (9.0%), with a small proportion stating they were unsure (7.7%).

Only 18.6% of respondents stated that the types of activities offered by their CBCG influence how frequently they volunteer. Activities identified by these respondents included to be more hands on with animals, having new experiences, being able to educate younger volunteers and caring for wildlife. A high proportion (61%) of respondents stated that volunteering was enjoyable (4) or very enjoyable (5), with no respondents stating it as not enjoyable (1), when enjoyment was ranked from 1 not enjoyable to 5 very enjoyable. Just over half of the respondents stated that they were very committed to their CBCG, and no respondents stated that they were not committed (Figure 5.2).

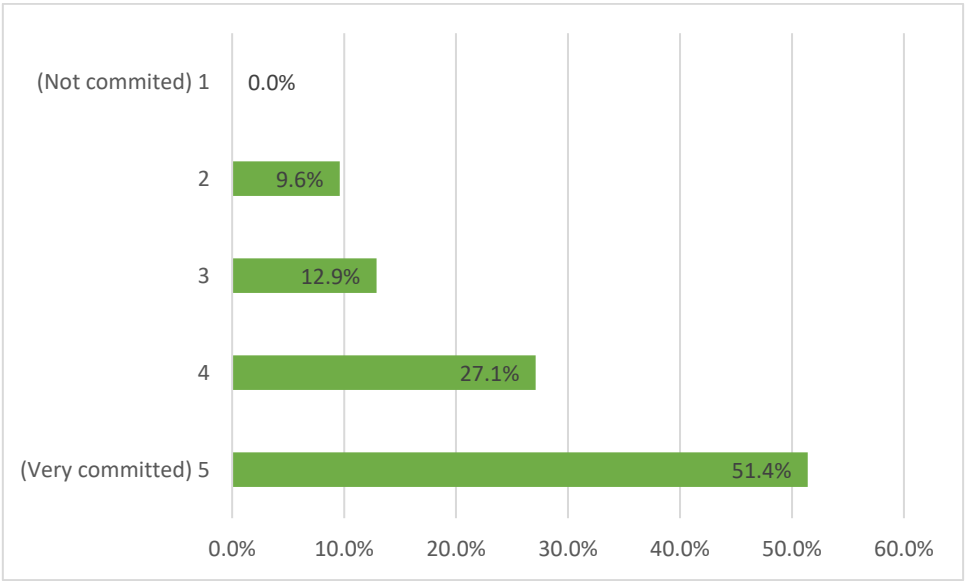

Figure 5.2 Volunteers' commitment levels when ranked from 1 (not committed) to 5 (very committed) (N=70).

There is a clear relationship between perceived enjoyment and commitment, with respondents that reported a high level of enjoyment also tending to report a high level of commitment (as illustrated in Table 5.1).

Table 5.1 The relationship between perceived commitment and enjoyment of respondents (N=70).

		Perceived enjoyment					
		1 (Not enjoyable)	2	3	4	5 (Very enjoyable)	Total
Perceived commitment	1 (Not committed)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2	0.0%	0.0%	36.4%	4.8%	2.7%	8.6%
	3	0.0%	0.0%	18.2%	28.6%	2.7%	12.9%
	4	0.0%	0.0%	27.3%	33.3%	21.6%	25.7%
	5 (Very committed)	0.0%	0.0%	18.2%	33.3%	73.0%	51.4%

5.3.4 Long-term motivation factors

Initial motivations are the factors that originally encouraged people to start volunteering, whereas long-term motivations are factors that contributed to volunteers' continued volunteering and increased frequency in volunteering. Table 5.2 shows how volunteers ranked the importance of long-term motivation factors, which are then compared to initial motivations in Table 5.3.

Table 5.2 Mean motivation factors for long-term volunteering, ranked from 1 (not important) to 5 (very important).

Long-term motivation factors	Mean	Standard deviation	Variance
To care for the environment	4.59	0.73	0.53
To help the local community	4.19	1.08	1.17
To be outside, or amongst nature	3.96	1.31	1.71
As a connection to nature	3.96	1.24	1.54
To learn new skills, or knowledge	3.33	1.36	1.86
To educate others	3.22	1.48	2.2
For personal growth	3.19	1.49	2.22
To socialize with others	3.18	1.34	1.79
To be involved in a well-run project	3.15	1.48	2.18
As an obligation to a group	2.96	1.38	1.9
For stress relief or escape	2.68	1.4	1.95
To get exercise	2.67	1.29	1.68
To advance my career	1.74	1.28	1.65

The four long-term motivations that were identified as the most important by respondents were ‘to care for the environment’ (m= 4.59), ‘to help the local community’ (m= 4.19), ‘as a connection to

nature' (m=3.96) and 'to be outside, or amongst nature' (m= 3.96), which all connect to the broad themes of environment and community. Interviewees reinforced the finding that volunteer motivation is often underpinned by a desire to make a meaningful contribution:

> For me it's about feeling purposeful. I don't want to fill in time I want to do something that matters (CBCG key representative).
>
> It's absolutely critical that people go away saying good I achieved something. I think [volunteers] find satisfaction in learning and feeling that they have really done something worthwhile (CBCG leader).

The three motivations that were identified as the least important on average were 'to advance my career' (m= 1.74), 'to get exercise' (m= 2.67) and 'for stress relief or escape' (m=2.68) and tend to be linked to more personal factors and goals of the individual volunteer.

When initial motivation factors are compared to long-term motivation factors (see Table 5.3), the top four motivation factors remain the same and there are a few differences between long-term and initial motivation factors in general. 'To learn new skills, or knowledge' is the only motivational factor that decreased from initial to long-term motivations. There are also a few factors that increased substantially including 'to help the local community', 'to socialize with others' and 'for stress relief or escape'.

There were also positive relationships between perceived commitment level and specific motivation factors including; 'as a connection to nature', 'to be outside amongst nature' and 'to care for the environment' as illustrated in Table 5.4. The higher the importance of these motivational factors, the higher the level of commitment.

Table 5.3 Comparison of motivation factors that encourage participation in community-based conservation initially and in the long-term.

Motivation factor	Initial mean	Long-term mean	Difference in means
To socialize with others	2.83	3.18	0.35
For stress relief or escape	2.36	2.68	0.32
To help the local community	3.99	4.19	0.2
For personal growth	3.07	3.19	0.12
To be involved in a well-run project	3.03	3.15	0.12
To get exercise	2.55	2.67	0.12
To advance my career	1.73	1.74	0.1
To care for the environment	4.51	4.59	0.08
To be outside, or amongst nature	3.91	3.96	0.05
As a connection to nature	3.92	3.96	0.04
To educate others	3.18	3.22	0.04
To learn new skills, or knowledge	3.64	3.33	-0.31

Table 5.4 The relationship between commitment level and 3 long term motivation factors (N=70).

		Importance of 'to care for the environment' as a motivational factor					
		1	2	3	4	5	Total
Perceived commitment	1 (not committed)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2	0.0%	0.0%	50.0%	5.9%	6.3%	8.6%
	3	0.0%	0.0%	25.0%	23.5%	8.3%	12.9%
	4	0.0%	0.0%	0.00%	41.2%	25.0%	27.1%
	5 (very committed	0.0%	0.0%	25.0%	29.4%	56.3%	47.1%
		Importance of 'to be outside, or amongst nature' as a motivational factor					
		1	2	3	4	5	Total
Perceived commitment	1 (not committed)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2	42.9%	25.0%	0.0%	5.0%	3.2%	9.0%
	3	0.0%	50.0%	0.0%	10.0%	16.1%	13.4%
	4	14.3%	25.0%	40.0%	40.0%	19.4%	26.9%
	5 (very committed)	28.6%	0.0%	60.0%	45.0%	54.8%	46.3%
		Importance of 'as a connection to nature' as a motivational factor					
		1	2	3	4	5	Total
Perceived commitment	1 (not committed)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2	50.0%	33.3%	0.0%	9.5%	0.0%	9.0%
	3	0.0%	33.3%	12.5%	9.5%	17.2%	13.4%
	4	16.7%	33.3%	50.0%	28.6%	20.7%	26.9%
	5 (very committed)	16.7%	0.0%	37.5%	52.4%	55.2%	46.3%

5.3.5 Volunteer connection

A connection to nature or a place was often identified by interviewees as a reason why volunteers were interested in CBC volunteering:

> It's helping the community get a connection back with the waterway… it's about [volunteers] having a better connection with the waterway, and seeing them as a living thing that does have fish and value rather than somewhere to just dump your rubbish (CBC programme coordinator).
>
> It's the tangible stuff that tugs on the strings a bit I think (CBCG leader).

It was clear that volunteers' connection to a specific place often underpinned their desire to participate:

> You appreciate a place for what it is and it's not good to see it being wrecked… we have a connection to Foxton beach (CBCG trustee).
>
> Locally a lot of people spent quite a bit of time up in the Ruahines and Tararuas[8], it's a big push for a lot of people they really want to protect those, because they feel connected. Connection is a big one… connection to the place, special species, taonga[9]species, quite often people want to get involved with stuff like that. To do with the bush, the birds (DOC representative).

Interviewees also highlighted the importance of social connections offered by participating in CBCGs:

> There are people who like to be connected, who like being out and about with a small group or just getting a sense of belonging (CBCG leader).

A high proportion of the volunteers surveyed had a connection to the group they volunteered for, the place they volunteered and nature in general while volunteering. The highest proportion of respondents characterised their connection to all three factors as very important shown in Table 5.5.

[8] Two mountain ranges which form the Eastern boundary of the Manawatū region.
[9] Taonga is a is a Māori word that refers to a treasured possession, or highly prized object.

Table 5.5 Percentage of volunteer perceived connection to CBCG, place where they volunteer, and nature in general while volunteering.

Rank (1-5)	Connection to CBCG	Connection to place	Connection to nature
1 (no connection)	0.0%	2.9%	1.4%
2	7.1%	5.8%	5.7%
3	14.3%	7.3%	11.4%
4	30.0%	20.3%	30.0%
5 (very connected)	48.6%	63.8%	51.4%

5.3.6 Retaining committed volunteers

CBCG leaders that were interviewed shared several strategies they used to encourage volunteers to continue to participate. In particular, they explained that it was important to offer volunteers a range of different tasks to reflect different peoples' interests and abilities:

> I try to give people choices so that if they're uncomfortable about doing something, there's another thing that they could do.' (CBCG leader)
> 'We are constantly looking at what volunteers can be doing because obviously the skill base and that sort of thing is amazing with volunteers. You have people that have more skills than any of us (employees) at doing everything you can imagine (CBCG employee).

The ENM encourages collective action and inspires CBCGs 'to work together on a common theme, to support each other and to really strengthen each other's voice' (ENM representative). ENM has created a place where CBCGs 'can be more successful, better connected, working towards shared visions' (ENM representative). Interviewees also emphasised the valued of ENM as an umbrella group providing member organisations with support and a platform to connect with one another:

> We find ENM just crucial, and if you are connected to them you will be fine. We are just tiny leaves fluttering in the breeze if it wasn't for the network. They bring us all together (CBCG trustee).
>
> It's not just a couple of people being busy bodies in a corner, there's actually a whole linkage. There's people interacting with the council. It's linked so although I'm only doing a little bit, I know I'm part of a bigger picture (CBCG key representative).
>
> It's great because you feel part of something bigger (CBCG leader).

5.4 Discussion

5.4.1 Key characteristics of community-based conversation volunteers

CBC volunteers in the Manawatū are typically older, retired and have a higher level of education than the general population. These trends have also been found in other studies about CBC and environmental volunteering, such as research by Chase and Levine (2018) and Heimann and Medvecky (2022). Interviews with key CBCG representatives revealed that most CBCGs have a core group of approximately 6 volunteers, who are very committed and turn up to regular working bees, events and meetings. They also have another cohort of volunteers who are less regular and turn up more spontaneously, often consisting of 20-50 individuals. Our results found that 34.6% of respondents were volunteering more than once a week and 18.0% were volunteering once a week, with 51.4% of volunteers perceiving themselves to be 'very committed' suggesting that a large proportion of respondents were from the core groups of CBC volunteers[10].

Another interesting finding was that out of the volunteers that perceived themselves as 'very committed' over 60% were over 60 years old, and only 8.4% were under 29 years old. These findings align with a study by Madsen et al (2021) in which older volunteers were more likely to commit to

[10] Although the questionnaire was distributed to as many CBCG volunteers in the Manawatū as possible, due to the voluntary nature of participation it is likely that more committed volunteers were more likely to complete the questionnaire.

volunteering than younger volunteers. Retired people are a great source of committed volunteers, typically due to having spare time and wanting to be involved in something with purpose (Pillemer et al., 2017). CBC volunteering is also beneficial to older people as it can have a positive impact on physical and mental health (Chen, Chen, Huang, & Loh, 2022; Ding & Schuett, 2020; Pillemer et al., 2017). However, CBCGs reliance on older volunteers also gives rise to several challenges. For example, older volunteers are more prone to health and mobility issues that can limit volunteering opportunities, or mean that they need to transition to less physical roles. Studies have shown that poor mobility and poor health, as a result of getting older were stated by volunteers as barriers to environmental volunteering (Hvenegaard & Perkins, 2019; Pope, 2005). There is also evidence that increased turnover rates and burnout of volunteers is more common among older volunteers (Hvenegaard & Perkins, 2019). Given the disproportionate number of older volunteers, it is important that CBCGs are flexible around volunteer commitment levels and volunteering hours, and offer a range of tasks that vary in physical ability (Bramston et al., 2011; Frensley et al., 2017; Larson et al., 2020; Pagès et al., 2018; Schild, 2018).

5.4.2 Factors motivating community-based conservation volunteers

Some motivational factors appear more important for CBC volunteers in the Manawatū, particularly 'helping the environment', 'helping the local community', 'to be outside, amongst nature' and 'as a connection to nature'. Other factors such as 'to get exercise' and 'to advance my career' were less important. Our study also found some differences between initial and long term motivation factors of respondents, with long term volunteers identifying 'to socialise with others', 'for stress relief or escape' and 'to help the local community' as more important in the long term than initially.

With a constant need for more volunteers, understanding volunteer motivations is an important aspect of volunteer recruitment and retention. Several leaders of local CBCGs within the Manawatū emphasised that there is a need for more volunteers, particularly committed volunteers. It was clear in interviews that although there is always a need for volunteers CBCG leaders wanted to appeal to a

smaller number of people who would become regular long term volunteers, rather than having lots of people that would show up once or twice. There was also an emphasis on a need for volunteers that would do a range of tasks that are less desirable such as weeding and ongoing maintenance, not just plantings or hands-on work with native wildlife, which is more typical of committed volunteers.

Our survey results also illustrated that volunteers' enjoyment and commitment were linked, with higher enjoyment leading to higher commitment. This is in line with a few studies that found that volunteers who have their motivations fulfilled are more likely to feel satisfied, leading to a higher probability of continued participation and commitment (Ding & Schuett, 2020; Domroese & Johnson, 2017; Takase et al., 2019). Therefore, in order to increase the satisfaction and commitment of volunteers it would be worthwhile to design projects that provide a variety of activities which align with key motivational factors, and incorporate a range of motivation factors throughout the project (New, 2010; Simakole, Farrelly, & Holland, 2019). For example, the 'to socialise' motivational factor could be easily added into a project design by giving people the option to work in small groups and allowing time for socialising after a working bee or event. The 'to help the environment' motivational factor could be incorporated by setting clear environmental goals, providing environmental education opportunities for volunteers and highlighting and celebrating progress at the end of a working bee or event. Another way to increase volunteer satisfaction is to provide volunteers with positive feedback and recognition (Gulliver et al., 2022; Hvenegaard & Perkins, 2019), so they feel as though the work they have done is worthwhile and valuable. 'Doing something worthwhile' was an important aspect of volunteering among CBCG volunteers in the Manawatū. When it comes to CBC it is beneficial to focus on concepts the community can identify with personally (New, 2010), and for people to not only see their progress but understand the importance behind what they are doing, so they can feel satisfied and purposeful. In turn this leads to an increase in environmental awareness and a desire to continue to contribute to conservation outcomes.

Some authors argue that there is a difference in motivational factors between initial and long-term volunteers, and that projects should offer a range of opportunities for different commitment levels (Hvenegaard & Perkins, 2019; McAteer, Flannery, & Murtagh, 2021). Studies show that people are often motivated to start volunteering because of a desire to help the environment and a need to socialise with others (Pagès et al., 2018; Schild, 2018). Whereas, long-term volunteers are often found to be motivated by feeling like a part of a community, personal experiences, attachment to a group or place, to be part of a well-run project and also to socialise with others (Asah & Blahna, 2013; Frensley et al., 2017; Pagès et al., 2018; Schild, 2018). Some of the CBCG representatives interviewed were successful in offering a range of tasks, that encouraged the use of different skills and abilities, within their group of volunteers.

Offering a range of tasks for volunteers is important to encourage continued participation, whether it is to offer a range of tasks that appeal to different skills, abilities or motivation factors, or to allow committed volunteers to take on a more leadership-based role. However, within our group of CBCGs a prevalent issue was succession of leaders. There tended to be a few key volunteers who keep the momentum going but a lack of people to replace or come alongside them. In order for CBCGs to be successful long-term and avoid the burn-out of key volunteers it is important the committed volunteers are encouraged to take leadership or management roles. Other studies have found that it is important that volunteers are given the opportunity for ongoing education and training, and are recognised for their efforts in order to build confidence which can lead to a desire to take on a leadership or management role (Frensley et al., 2017; Gulliver et al., 2022; Hvenegaard & Perkins, 2019). Few CBCGs in the Manawatū offer educational opportunities, with little mention of education or training of volunteers in interviews and on the questionnaire.

Our survey found some differences between initial and long-term motivations of CBC volunteers, but the relative importance of motivation factors between initial and long-term did not really change. However, the results indicate that volunteers increasingly value socialisation, stress relief/escape and

the idea of helping the local community, and value the ability to learn new skills and knowledge less. The opportunity for socialisation between volunteers has been found to be a key aspect in successful volunteer-based projects (Ding & Schuett, 2020; Hvenegaard & Perkins, 2019; Laverie & McDonald, 2007; Pagès et al., 2018; Schild, 2018). However, 'to socialise with others' wasn't identified as very important as an initial motivation factor in our study, so it therefore makes sense that as volunteers get to know each other the social aspect of volunteering becomes more important, as opposed to 'to help the environment' which was already ranked relatively high and so unlikely to increase substantially. An increase in the desire 'to help the local community' is also expected as volunteering in a local area has been found to promote relationships between locals, help develop self-efficacy (Ohmer et al., 2009), and contribute to an attachment to place. This makes it more likely that volunteers would continue to restore or enhance a local area.

There is a wealth of literature on the health benefits of volunteering, particularly CBC and environmental volunteering. Consequently, volunteers may have found that after volunteering for some time that they are benefiting from the mental health benefits, including stress relief. The decrease in importance of learning new skills and knowledge could be due to the fact that there is minimal training and education available for CBC volunteers in the Manawatū region, and therefore they may just be doing the same tasks each time they volunteer. However, it may be that once volunteers reach a certain level of skill and experience there isn't much more to learn within a given group, and hence the importance of this aspect diminishes over time, relative to other aspects.

5.4.3 Attracting and retaining committed volunteers

As mentioned above, Predator Free 2050 is a national programme that is dependent on the collaborative effort of iwi, CBCGs, councils, NGOs and government stakeholders, with a considerable reliance on volunteers across the country. To be successful it requires committed volunteers on the ground regularly laying, checking and maintaining traps, alongside the collection of significant amounts of data (Department of Conservation, 2020a, 2021). Motivational factors play an important

role in having committed volunteers, therefore a better understanding of what drives volunteers is likely to lead to improved success rates and environmental outcomes. However, the volunteer workforce in the conservation area is limited and there is a definite need for more committed volunteers already, without the additional pressure of Predator Free 2050. This raises the question of whether or not Predator Free 2050 is a realistic goal especially with the strong reliance on volunteers and the community, instead of being fully funded by the government. In order for Aotearoa New Zealand to be able to achieve such an ambitious conservation goal, the government needs to dramatically increase support and funding to CBCGs that are implementing the practical measures needed to achieve Predator Free 2050's objectives. However, the recent change in government suggests this is unlikely to happen (Environmental Defence Society, 2024) and the success of Predator Free 2050 will remain highly dependent on committed volunteers.

There have been limited studies on volunteer motivations in Aotearoa New Zealand, and none that have investigated the Manawatū region. The Manawatū is a region that has experienced significant loss in biodiversity and clearing of original habitats. Therefore, this region is in dire need of habitat rehabilitation and support of its limited remnant habitats. This study gives us a clearer understanding of what drives local CBCGs to help protect and enhance local areas, address local conservation issues, and be involved in national conservation efforts. The results from this study also add to other studies both in Aotearoa New Zealand and overseas to allow us to see general trends in what motivates CBC volunteers, and how to build a volunteer force that is committed to achieving both local, national and international conservation goals.

Successful volunteer-based projects have been found to account for volunteer motivations and socialization; they tend to be focused, long-term and provide volunteers with training, support and recognition (Bruyere & Rappe, 2007; Gulliver et al., 2022; Newton et al., 2014; Van Den Berg, Dann, & Dirkx, 2009). These factors are often mentioned in the literature and are thought to positively impact volunteer satisfaction, and therefore commitment (Ding & Schuett, 2020; Frensley et al., 2017;

Gulliver et al., 2022; Hvenegaard & Perkins, 2019; Newton et al., 2014). The interviews with CBC volunteers revealed that most of the CBCGs have a social aspect to them and allow time for volunteers to get to know each other; there was an awareness of key factors that motivate people, but more could be done to incorporate motivations in project designs. The success and focus of long-term projects tended to be very dependent on a few key individuals, but overall, there was a recognition of the worth of volunteers. The key concept that is regularly mentioned in the literature to improve volunteer commitment, but is limited in Manawatū CBCs, is ongoing training and education, which may contribute to the difficulties with the succession of leaders within the groups. Many of the CBCGs in the Manawatū are small and have minimal funding therefore in order to achieve effective training and education it would require a government organisation, such as DOC, or a larger umbrella group to step up to fund and run targeted training courses.

5.4.4 The importance of volunteer connection

Many CBC volunteers have a desire to see and be in nature, along with a concern for the environment (Gooch, 2003; Krasny, Crestol, Tidball, & Stedman, 2014). There is a significant body of literature on connecting people with the environment, and the impact this connection has on environmental values and actions, including its impact on CBC volunteering (Laverie & McDonald, 2007; Nisbet, Zelenski, & Murphy, 2009; Pagès et al., 2018; Schild, 2018). Schild (2018) found that volunteers experienced an improved connection to nature and to the place where they were volunteering; this is consistent with the findings of Gooch (2003) and Ryan (2005). Furthermore, a study by Pagès et al (2018) found that attachments to place and wildlife are often closely linked to the motivation factors of environmental volunteers. This aligns with our study in which volunteers who perceived themselves to be highly connected to place tended to find the following motivation factors of high importance: ‘to care for the environment’, ‘to be outside, or amongst nature’ and ‘to help the local community’. Several studies argue that an attachment to place, and connection to nature can also act as independent motivation factors (Gooch, 2003; Schild, 2018).

Several interviewees of CBCG's in the Manawatū identified forms of connection as key motivation factors and therefore the connection to a place is a great way of recruiting volunteers and getting them involved in local conservation efforts. CBC volunteers' connection to a place often drove their desire to participate, as they wanted to protect or restore a place that is close to their heart, in their local community. Building a connection between the community and local green spaces, or targeting people who already have a connection to these spaces, could be an effective way of attracting committed volunteers. Another way to promote a connection which was mentioned by Forgie, Horsley, and Johnston (2001) is to promote the uniqueness of Aotearoa New Zealand's biodiversity so people develop a deep commitment to the environment. In the interviews with leaders of CBCGs it was mentioned that some of the most committed volunteers tend to be the ones that live nearby the volunteering sites and use them regularly for recreation or relaxation. So encouraging people to use green spaces in a respectful way could promote a connection to conservation sites, and thereby increase the number of people who care for the site and in turn increase people willing to volunteer in order to protect or restore the site.

Interviewees often mentioned the concept of connecting with other CBCGs or working together to achieve conservation outcomes. This was especially important to the smaller groups, as it made them feel like they were a part of something bigger and worthwhile. The Environment Network Manawatū (ENM) was often mentioned as a vital mechanism to bring groups together. Most of the interviewees representing CBCGs that are associated with the ENM expressed that they felt well supported and connected by the network. However, some believed there was still a need for further cooperation between CBCGs. From discussions with CBCG leaders it is clear that for the most part ENM does an exemplary job of supporting CBCGs and bringing them together on large over-arching projects, in a way that allows the CBCGs to decide what they want to come together to achieve. However, not all CBCGs are going to be interested in every combined project, and the specific goals of individual CBCGs

may not align with the current combined project but future projects may be more aligned to a different selection of CBCGs.

5.5 Conclusion

In conclusion, this study contributes to our understanding of long-term motivations of individuals involved in CBC and environmental volunteering. This study investigated CBC volunteers in Manawatū, Aotearoa New Zealand, a region that is in need of significant habitat restoration and protection, by interviewing and surveying the people who are actively making a difference. In-person interviews often at conservation sites allowed for a deep understanding of why they were volunteering and what support was needed for them to continue to make an impact. Volunteers play a key role in environmental projects, and therefore it is important to be able to not only recruit but retain volunteers, particularly committed volunteers. If environmental projects are to have positive long-term effects on the environment, a continuous effort is crucial. Thus, it is important that volunteer motivations are taken into account initially and throughout projects, so that volunteers are satisfied and engaged. Ideally there should also be a range of tasks for volunteers that cater for different motivational factors, including tasks that lead into leadership roles. Volunteers also need to have time to socialize with others, feel appreciated and have access to targeted, ongoing education and training.

'To help the environment' was identified as the top motivation factor by CBC volunteers in the Manawatū. So, it would be beneficial to actively incorporate this motivation factor into local CBC projects. This can be achieved by having clear, transparent environmental goals, providing opportunities for volunteers to engage in relevant environmental education and acknowledging and celebrating progress toward achieving goals and clearly communicating the next steps to move forward. Building a connection to nature and/or an attachment to place through volunteer experiences can also be an effective way to attract and retain committed volunteers. Local residents and users of local green spaces may already have a connection to the place and therefore make a

great target pool for volunteers. Helping individuals build a connection by highlighting the uniqueness and beauty of local areas and emphasising the important role of CBC in protecting them can also help attract and retain committed volunteers who want to restore and preserve them.

With the government increasingly relying on volunteers to help achieve biodiversity goals and drive national conservation initiatives, such as Predator Free 2050, it is critical that there is more research around motivation factors that promote committed CBC volunteers. This study takes a local, on-the-ground approach to gain an understanding of local CBCGs and what drives their volunteers. Similar studies in other regions would help verify our findings and identify the key motivation factors that drive CBC throughout Aotearoa New Zealand. Further research is also needed to continue to examine the role motivation factors play in the commitment of CBC volunteers, and how to increase not only volunteers but committed volunteers. It is essential that CBCGs are effective and able to contribute to local, and/or national conservation goals. As such, further investigation into community-based environmental monitoring and the motivation factors that encourage volunteers to be involved in data collection would help to find ways to increase community-based environmental monitoring and allow CBCGs to track the progress and effectiveness of local conservation projects.

6. BARRIERS TO VOLUNTEERING AND OTHER CHALLENGES FACING COMMUNITY-BASED CONSERVATION IN AOTEAROA NEW ZEALAND

Chapter 4 and 5 provided insight into CBC volunteers' initial and long-term motivations. However, there is still a need to understand the barriers preventing individuals from volunteering in the first place, what limits the participation of people who do volunteer, and other challenges facing community-based conservation groups. Therefore, this chapter examines key barriers and challenges facing CBCGs, including the importance of relationships with key stakeholders and the role of community based environmental monitoring. This chapter has been peer-reviewed and accepted for publication in *Pacific Conservation Biology* and is currently in press.

6.1 Abstract

In many countries, community-based conservation plays an important role in protecting natural ecosystems and preserving biodiversity. However, community-based conservation groups face a variety of challenges including recruiting and retaining volunteers, maintaining relationships with stakeholders and monitoring progress towards achieving conservation objectives. In order to address these challenges, it is important to understand the barriers to volunteering, aspects potentially limiting the effectiveness of community-based conservation, and ways to assess and improve effectiveness. This research explores these barriers and looks at some potential solutions through a case study of community-based conservation in the Manawatū region of Aotearoa New Zealand. An online questionnaire was used to explore the experiences and perspectives of volunteers participating in community-based conservation initiatives. Twenty-one in-depth semi-structured interviews were also carried out with group leaders and other key stakeholders. Our research showed that one of the most effective ways of recruiting new volunteers was through social interaction and that the main barriers to participation were time commitment and health issues. Relationships between volunteers,

non-government organisations and government agencies also impacted the success of local groups, and environmental monitoring was key to obtaining funding and documenting success.

6.2 Introduction

Community-based conservation (CBC) relies on hard-working volunteers and the support of government agencies and non-government organisations (NGOs) to achieve conservation goals (Forgie *et al.* 2001). There are a range of factors that impact CBC effectiveness, including the capacity to recruit volunteers, barriers to volunteering, and relationships with volunteers, and other stakeholders (Forgie *et al.* 2001; Bushway *et al.* 2011; Liarakou *et al.* 2011; Higgins and Shackleton 2015). Community-based environmental monitoring is also important to CBC effectiveness as it allows community-based conservation groups (CBCGs) to assess their progress and apply for funding (Peters *et al.* 2015; Peters *et al.* 2016; Sullivan and Molles 2016; Jones and Kirk 2018).

Environmental organisations often struggle to recruit and retain volunteers, leading to high volunteer turnover rates, and wasted time and resources recruiting and training new volunteers (Bushway *et al.* 2011; Asah and Blahna 2013; Higgins and Shackleton 2015; Ding and Schuett 2020). Research into the participation in CBC has identified an array of barriers which prevent the general public from becoming involved in or continuing to be involved in CBC including a lack of awareness of opportunities (Hobbs and White 2012), time constraints, including work, study and family life balance (Higgins and Shackleton 2015; Frensley *et al.* 2017; Hvenegaard and Perkins 2019; Heimann and Medvecky 2022), proximity to home (Hobbs and White 2012; Madsen *et al.* 2021; Thomas *et al.* 2021), perceived confidence and capability to participate (Hobbs and White 2012), building relationships between volunteers, iwi and government agencies (Forgie *et al.* 2001), and health issues including limited mobility (Hobbs and White 2012; Hvenegaard and Perkins 2019).

Due to the small number of volunteers in many community-based conservation groups (CGBGS) there can be limited support for volunteers and leaders; this in turn can contribute to the loss of volunteers.

Issues that can arise are volunteers feeling overwhelmed, being overworked, lacking a suitable role, having limited support, having inadequate training, poor organisational management, and feelings of obligation, instead of satisfaction (Frensley *et al.* 2017; Schild 2018; Takase *et al.* 2019; Ganzevoort and van den Born 2020).

Another important factor that influences the effectiveness of CBC is the relationships not only between volunteers but between CBCGs and other groups including iwi, NGO's, and local and regional government (Forgie *et al.* 2001; Wilson 2005; Peters *et al.* 2015a). Because CBCGs are often small and not well funded they often rely on other groups and organisations for technical support, funding, education and training programmes. As a consequence, the success of CBCGs can be heavily impacted by the support of others, and many CBCGs wouldn't be successful without help from other groups (Forgie *et al.* 2001). Local iwi play an important role in conservation efforts in Aotearoa New Zealand (Roberts et al, 1995 and Taiepa, 1997). Both the Conservation Act 1987 and the Resource Management Act 1990 explicitly require all persons exercising functions and powers under them to give effect to the principles of the Treaty of Waitangi (Ti Tiriti o Waitangi) (Environment Foundation 2018). Therefore, giving effect to the Treaty principles are crucial considerations for government agencies and community organisations involved in conservation management.

Community-based environmental monitoring is also key to effective CBC as it allows a CBCGs to track progress and success, allowing CBCGs to adjust their work accordingly to achieve conservation goals. Community-based environmental monitoring, also sometimes referred to as volunteer monitoring or participatory resource monitoring, is a form of citizen science in which volunteers track changes in species abundance and distribution, measure ecosystem health and, in some instances, provide data for local, regional and national decision making (Dickinson *et al.* 2012; Gura 2013; Peters *et al.* 2015; Galbraith *et al.* 2016; Orchard 2019). Community-based environmental monitoring can range from a simple one-off experiment to an expansive, long-term study (Dickinson *et al.* 2012), and is used for a wide variety of reasons including large scale data collection (Dickinson *et al.* 2012; Silvertown *et al.*

2013; Peters *et al.* 2015; Galbraith *et al.* 2016); education (Crall *et al.* 2012; Gura 2013); building relationships between local people, businesses and government (Peters *et al.* 2015a); and to help with CBC management (Conrad and Hilchey 2011; Orchard 2019). Some examples of community-based environmental monitoring methods employed by CBCGs include species counts (to monitor species abundance and distribution by counting species in a given area), photo points (to track progress of a specific area by periodically taking photos from the same location), pest tracking tunnels (to identify and track the abundance of pest species in the area by footprint tracks) and 5-minute bird counts (to identify the presence of bird species in an area by their call) (Sher and Molles Jr 2022). Community-based environmental monitoring has become a common method for carrying out long term conservation studies and is often required when CBCGs apply for funding and grants (Dickinson *et al.* 2012; Silvertown *et al.* 2013).

In order to recruit new volunteers and reduce turnover rates CBCG's need to have an understanding of the key barriers that restrict people from volunteering, and what can be done to alleviate them. There also needs to be clearer planning and the implementation of community-based environmental monitoring to track progress and allow CBCGS to obtain funding, along with strong relationships between local groups and other organisations. This research aims to address four key questions within the context of the Manawatū region of Aotearoa New Zealand: (1) What are the key barriers to CBC volunteering? (2) What can be done to improve volunteer retention? (3) How can strong relationships between CBCGs relevant stakeholders be developed? (4) How can CBCGs be encouraged and supported to implement community-based environmental monitoring?

This research contributes to the growing literature on the community-based conservation, and the limited studies carried out in Aotearoa New Zealand. In particular, this research seeks to fill a gap in the literature by interviewing and surveying local volunteers in the Manawatū region. The Manawatū region was selected for this study as the region has been greatly impacted by native habitat loss and the introduction of mammalian predators. Therefore, this region is in dire need of ecological

restoration, habitat protection and targeted predator control (Craig *et al.* 2000; Jones and Kirk 2018). The Manawatū region is also a good place for a case study as the region's demographic characteristics are close to the New Zealand average (McKinnon 2015; Stats NZ 2018a). As such, as well providing insights into the local context, the findings of this study can inform community-based conservation groups efforts to recruit and retain volunteers across Aotearoa New Zealand. This study is relevant to a variety of fields including conservation biology and environmental management.

6.3 Methods

This paper examines the barriers and challenges faced by CBC volunteers in the Manawatū region of Aotearoa New Zealand. A mixed-methods approach was used including an online investigation of local CBCGs, semi-structured interviews with CBCG coordinators and stakeholders and a questionnaire for CBC volunteers.

The Manawatū region is located in the lower half of the North Island of Aotearoa New Zealand (Figure 6.1). The main population centre is Palmerston North with a population of approximately 85,000 (Stats NZ 2018b). There are also several smaller towns including Feilding, Woodville, Dannevirke, Pahiatua and Foxton. The Manawatū River runs through the Manawatū and is 235 km long with a number of large tributaries including the Oroua, Mangatainoka, Mangahao, Pohangina and Tiraumea (LAWA, 2023). The catchment includes a series of mountain ranges notably the Tararua and Ruahine ranges, and plains that extend between the ranges and the sea.

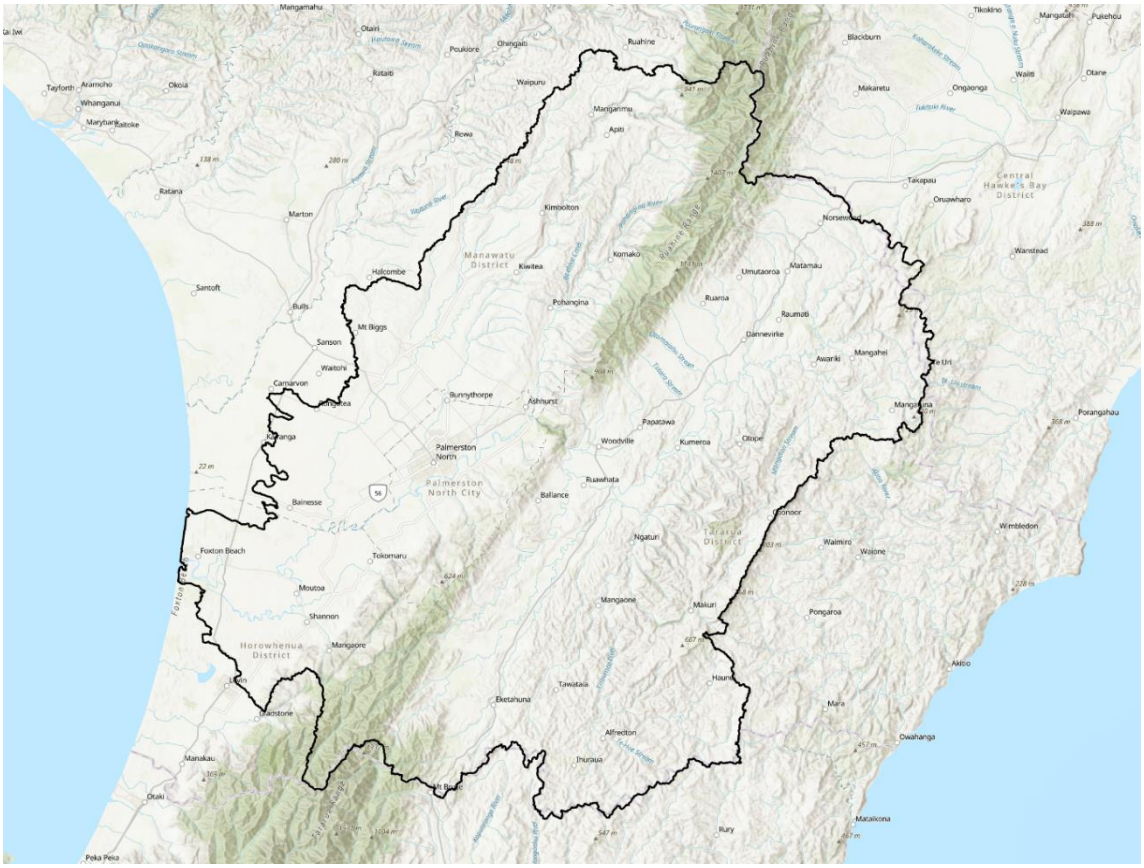

Figure 6.1 Map of the Manawatū region in Aotearoa New Zealand.

The Manawatū has several areas of ecological significance including the Manawatū Gorge Scenic Reserve, and the Manawatū Estuary which is an internationally recognised RAMSAR site at Foxton Beach (National Wetland Trust of New Zealand 2023). The Manawatū is known for its agricultural sector, which includes dairy cattle farming, sheep and beef cattle farming, and crop growing (Figure NZ Trust 2023). Palmerston North is also home to three tertiary education institutions; Massey University, the Universal College of Learning (UCOL) and the Institute of the Pacific United (IPU). As a result, it has an unusually high proportion of highly-educated residents for a town of its size, including a large number of tertiary students as well as many current and retired academics.

6.3.1 Online investigation and systematic review

A preliminary online investigation was carried out to identify all CBCGs currently operating in the Manawatū. The websites of The Environment Network Manawatū (ENM), Forest and Bird and the Department of Conservation (DOC) were examined in order to find all relevant groups based in the Manawatū which have conservation-based objectives. In total, twenty-one CBCGs were identified. These groups carry out a wide variety of tasks including predator control, planting native vegetation, weeding, growing native plants, habitat restoration, education, advocacy, and litter collection. Appendix 1 provides a summary of the information collected about each of the CBCGs.

A systematic literature review was then carried to identify, synthesise and analyse the peer-reviewed literature on motivations of environmental volunteers, to pinpoint key factors influencing volunteer motivations, barriers and satisfaction and develop the interview and questionnaire instruments (see Sextus *et al.* 2024a). In particular, key sources that contributed to developing the interview and questionnaire questions included: Clary *et al.* (1998); Ryan *et al.* (2001); Bruyere and Rappe (2007); Hvenegaard and Perkins (2019); Heimann and Medvecky (2022).

6.3.2 Semi-structured interviews

After obtaining ethics approval in accordance with the *Massey University Code of Ethical Conduct for Research, Teaching and Evaluations Involving Human Participants*, each of the 21 CBCGs, ENM, Forest and Bird and DOC were contacted via email and invited to participate in a semi-structured interview. A representative from DOC and ENM, and representatives from 12 CBCGs were interviewed. These interviews provided a comprehensive overview of the local CBCGs and their volunteers, with a particular focus on individuals' motivations to participate in CBC volunteering and barriers and challenges faced by volunteers and groups. A total of 21 interviews were conducted between November 2020 and April 2023.

Each interview was approximately 45 minutes and consisted of 9 open-ended questions for CBCG volunteers and an additional 3 questions for CBCG leaders and other representatives (as outlined in Appendix 2). Interviewees were asked about their CBCG and volunteers, and about their own personal experiences and motivations for volunteering. They were also asked about their perception of the motivation of other volunteers, limitations and issues around recruitment and retention and other challenges. Each interview was recorded, transcribed, and analysed for key themes. The issues and themes raised in the interviews, together with insights from the literature informed the development on the questionnaire for CBC volunteers.

6.3.3 Questionnaire

Additional data was collected via an online questionnaire consisting of short answer and multiple-choice questions, with a section at the end for participants to share any other thoughts or experiences. The online questionnaire was created and administered using Qualtrics™ (qualtrics.com); there was also a paper version provided at the ENM office and available upon request. Respondents had to be a volunteer, or have previously volunteered in a CBCG, in the Manawatū region. The questionnaire was open from October 29th 2021 till February 24th 2022.

Recruitment for the questionnaire was carried out using both targeted and snowball sampling (Sarantakos 2013; Denscombe 2014). Volunteers were reached via an email with a link to the questionnaire sent from the ENM to all its active members; an advertisement was also placed in the ENM newsletter. Each CBCG that was identified in the online investigation was also sent the same email to their listed contact email address. Recipients of the email received a link to the questionnaire with an invitation to send it on to all their volunteers or past volunteers. The questionnaire invitation included a short summary of the study, a link to the online questionnaire, and an option to have a paper version delivered to them if required. The questionnaire had 101 respondents, representing 21 CBCGs, and respondents from ENM and DOC. Seventeen of the twenty-one CBCGs identified in the

online investigation, were represented along with 4 additional CBCGs that were not identified in the online investigation.

The questionnaire was designed to provide a well-rounded picture of the characteristics, behaviours, motivations of CBC volunteers in the Manawatū, and was developed from relevant literature and from information obtained from face-to-face interviews. The questionnaire consisted of 43 questions, which covered volunteering details, demographics of volunteers, motivations for environmental volunteering, commitment and satisfaction, barriers to volunteering, environmental monitoring, relationships with iwi and government organisations and attitudes towards pro-environmental behaviours. The responses to the questionnaire were first analysed using Qualtrics™ and then synthesised in the context of the key themes identified from the systematic literature review and the semi-structured interviews. The findings relating to barriers to CBC volunteering, volunteer recruitment, building relationships between stakeholders and environmental monitoring are described and discussed below (for the findings relating to long-term CBC volunteer motivations, volunteer commitment and satisfaction and pro-environmental behaviours please see (Sextus *et al.* 2024b).

6.3.4 Limitations

The key limitation of this study is that we were unable to obtain a random representative sample. The total number of CBC volunteers in the Manawatū is unknown and there is no list of current volunteers from which to select a random sample. Therefore, we attempted to reach as many CBC volunteers as possible using the strategies outlined above, including sharing the online questionnaire as widely as possible and making a paper copy of the questionnaire available to volunteers who might prefer to participate offline.

6.4 Results

6.4.1 Characteristics of volunteers

The interviewees represented a variety of CBCGs from small groups consisting of approximately six volunteers to larger CBCGs with 30-40 volunteers. Interviewees were mostly leaders or long term volunteers of CBCGs within the Manawatū, however some were also trustees and paid co-ordinators or employees of CBCGs. We also interviewed a representative from ENM and DOC. There was a wide age range with the youngest being in their 20's and a large proportion of older, retired individuals. There were slightly more females than males. Many of the interviewees had degrees in a range of fields. All interviewees were extremely happy to discuss their CBCG and the role they play in conservation efforts in the Manawatū.

Volunteers who responded to the questionnaire tended to be older, highly educated and either retired or in part time employment. There were slightly more females (53%) than males (46%). There was a wide age range among the volunteers, with a high proportion of older individuals (70% of respondents were over 50). The volunteers also tended to be highly educated with 85% of volunteers having some form of tertiary education. The largest group of respondents were retired (47%), followed by those in paid employment for less than 30 hours per week (21%) (Figure 6.2).

Respondents had volunteered in CBC activities from a few months to over 40 years, with the highest proportion of respondents having volunteered between 1 and 5 years (41.9%), and the smallest proportion for 16-20 years (5.4%). There was also a range of volunteering frequency with the highest proportion of respondents volunteering more than once a week (34.6%) (Figure 6.3).

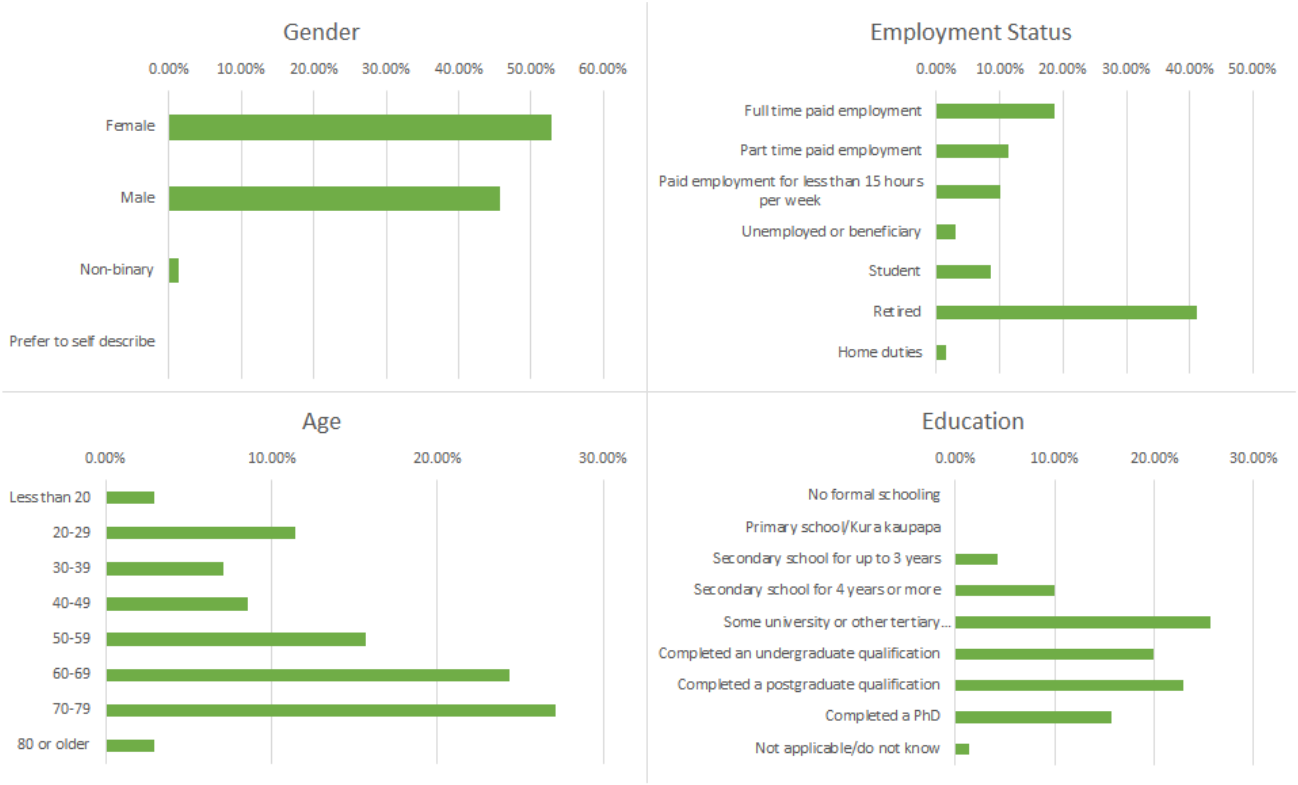

Figure 6.2. Key demographic characteristics of the questionnaire respondents (N=70).

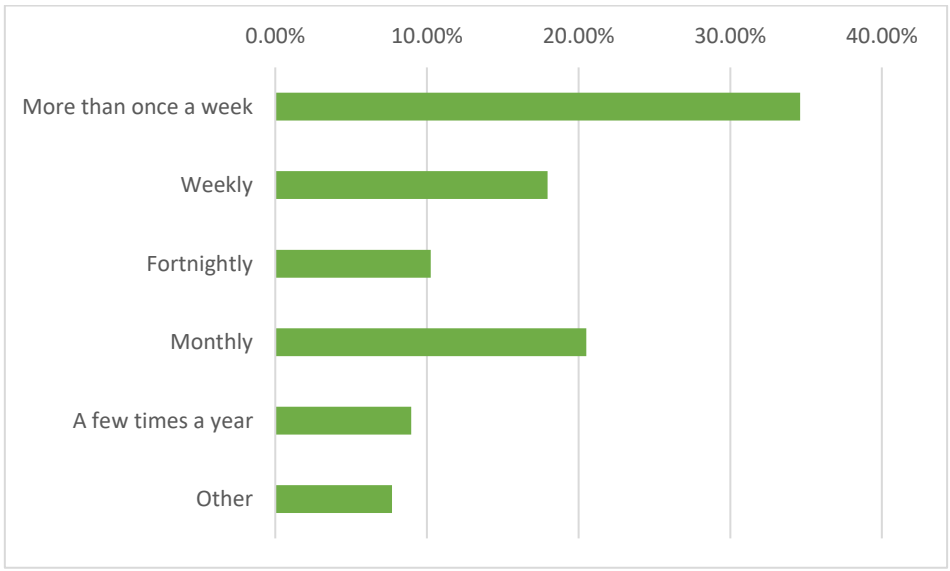

Figure 6.3. The proportion of volunteering frequency of questionnaire respondents (N=78).

6.4.2 Volunteer recruitment

Interviews with local CBCG representatives revealed that recruitment is a barrier to effective CBC:

> It's a big issue. I've had various attempts at getting the community involved with limited success, but because I'm so busy and the lack of interest I essentially gave up (CBCG member).

> [We recruit volunteers] with difficulty, actually. It's very, very difficult. We promote it on our Facebook page. One of the issues I have had is that I always respond to volunteers offering to come but for whatever reason they then don't turn up. It's probably a 50% success rate of going out to the community and saying will you come and help? (CBCG leader).

There was typically a limited effort put into recruiting new volunteers and it tended to be left to interactions with current volunteers or through social media, as explained by two interviewees:

> It's word of mouth, people who know people. We do sometimes post on Facebook (CBCG leader).

> They pretty much recruit themselves. We do posts every now and then on social media saying we want some extra volunteers, or people, word of mouth is handy. We basically just try to get our name out in the community (CBCG employee).

> It's word of mouth, people who know people. Often people have become a bit lonely and would like to have some input, social interaction (CBCG leader).

> Word of mouth or people see an article in the guardian or stumble across our website or have been dragged into some volunteering by a family member. We are really open to any group with an interest (CBCG co-ordinator).

> We just use the Facebook page, it's all locals. Most people have been involved from quite early on (CBCG leader).

Questionnaire respondents were asked "How did you come to join your environmental group?". The top types of recruitment were a social interaction with a volunteer (25%), a local advertisement (20%), having previous experience in CBC (16%) or seeing a need in their local community (16%) (Figure 6.4). Of all the respondents 67% had brought another individual to their CBCG at least once and individuals who were brought along often attended multiple times, with 37% attending a few times, and 47% attending regularly.

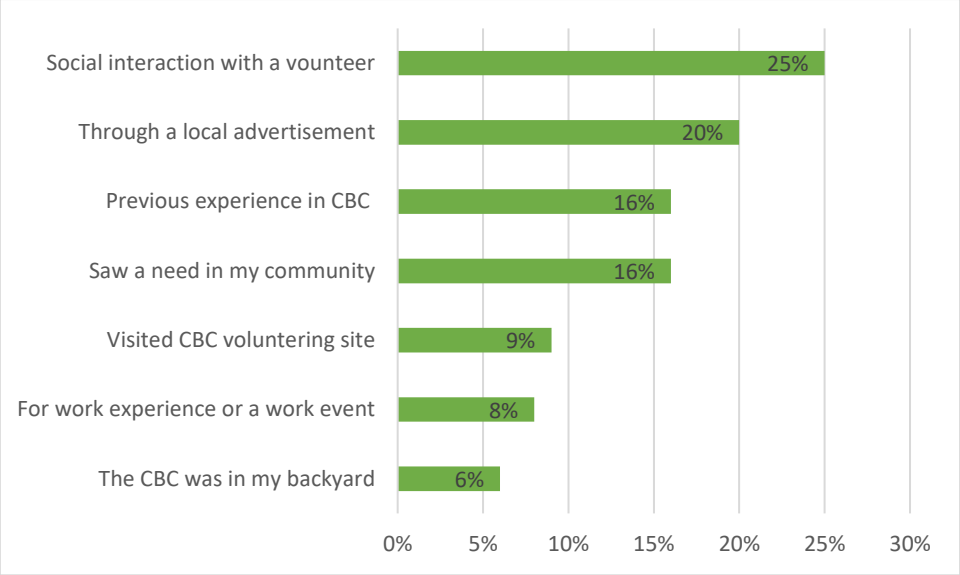

Figure 6.4 Ways that questionnaire respondents were recruited to community-based conservation volunteering (N=74).

6.4.3 Barriers to community-based conservation volunteering

When asked "Are there any factors that make it difficult, or which limit your ability to volunteer?" fifty-eight percent of questionnaire respondents stated that there are factors that sometimes make it difficult for them to volunteer. The most frequently mentioned factors were health issues, working and/or studying, family commitments and time constraints. Other barriers identified by some respondents included lack of funds, inability to keep up with technology, the negative impact of COVID and the lack of non-physical options.

Respondents were asked to rate a series of barriers that were found to be common in the literature about CBC, on a scale of 1-5, where 1 was not limiting and 5 was very limiting. Out of a range of common barriers time taken ($\bar{x}$=2.87 out of 5), travelling distance ($\bar{x}$= 2.31) and health issues ($\bar{x}$=2.07) were identified as the most likely to limit respondent's participation in CBC (Table 6.1). However, no barriers were identified as being very limiting to respondent volunteering.

Table 6.1 Impact of a range of barriers on respondents volunteering in CBC, where 1 is not limiting and 5 is very limiting (N=82).

Barrier to volunteering	Mean	Standard deviation	Variance
Time taken	2.87	1.48	2.2
Travelling distance	2.31	1.47	2.16
Lack of activity options	1.63	0.97	0.94
Lack of activity relevance	1.85	1.26	1.6
Health issues	2.07	1.35	1.81
Lack of resources	1.9	1.28	1.64

Time was also identified as a key barrier in interviews with CBCG leaders who reported often finding it difficult to get volunteers to commit their time to volunteering especially when volunteering sites weren't local:

> It's super time consuming and when you don't have much spare time it's a big ask (CBCG volunteer).

> Because people have to travel, its far more drop in, drop out. People don't stick around and having to train people means there is too much admin for little return (CBCG leader).

6.4.4 Improving volunteer retention

Questionnaire respondents were asked if there were any reasons that would cause them to stop volunteering for their CBCG. The most frequently mentioned reasons were future health issues or an inability to do the work, moving out of the area, needing to work more hours or getting a full-time job, conflict with other volunteers, and when they no longer can make a useful contribution. This was also reflected in answers from interviewees:

> Work got too busy, work clashes with time of working bee, one volunteer got injured on a tramp, and some moved out of the area. We are learning and we are improving the way we do things (CBCG leader).
>
> Peoples' priorities in life change, they have families or different work commitments (CBCG co-ordinator).
>
> They (volunteers) don't leave the group, they just hover in the background (CBCG leader).
>
> Some (volunteers) have taken a back seat but we can call on them and we do when we need something (CBCG trustee).

Forty-three percent of respondents knew of someone who had stopped volunteering for their CBCG. The perceived reasons for leaving were very similar to the respondent's reasons stated above and included getting a full-time job, moving out of the area, health issues or death, lack of appreciation, conflict with other volunteers, and frustration at lack of action from the local council.

Interviews with local CBCG representatives revealed that some groups deliberately ensure that they offer a range of tasks which allows older volunteers or volunteers with limited mobility to continue to volunteer:

> We split the jobs because there is so much to do. There's the visitor hosting side of things which is suitable for the people that aren't super mobile or physical and some people just like chatting to people out there (CBCG employee).
>
> We have some older retired people who absolutely love coming in but can only do a few hours a month or they are off for a hip replacement or something like that, so they are away for months and then come back (CBCG employee).
>
> We accept anyone for who they are, people know they can come and do as much as they are able to do and we will find a job that fits their ability. One lady used to be an active member of the planting side of things but as she has gotten older she can't do that so every month she organises the morning tea (CBCG leader).

Other opportunities to improve volunteer retention that were raised by interviewees included:

> In order to get the most out of the time that the volunteers are with you, it's got to be prepared. Otherwise, people go away saying gosh that was a muddle or we didn't really achieve what we wanted to do (CBCG leader).
>
> I try to give people choices so that if their uncomfortable about doing something there's another thing that they could do (CBCG leader).

An issue that was mentioned by interviewees that was not addressed in the questionnaire was the need for funding to pay for co-ordinators, and the lack of leadership succession:

> I think the biggest challenge for most environmental groups is that it's easy to for us to get funding for plants or for traps. It's very hard to get co-ordinator time funded and a lot of our groups run on volunteer goodwill, when you get to a certain point, you can't expect volunteers to do that. It's got to be somebody's job (CBCG co-ordinator).
>
> The pollution challenge got a grant and so we had a co-ordinator and that's a critical thing. I mean funding for a paid co-ordinator makes a big difference (CBCG volunteer).
>
> The energy of one or two key people is critical, both of those women (CBCG leaders) make real contributions to the community. Succession is a big issue with volunteer groups for sure (CBCG volunteer).

6.4.5 Relationships between community-based conservation groups, local council and other stakeholders

Interviews with local CBCG representatives revealed that there is a need for better communication, and relationships, between local council and CBCGs:

> Volunteers will leave, because they think that their work wasn't recognised enough by council. Why do it, if it should be done by council? (CBCG trustee).
>
> They [the Council] should be facilitating and enabling the community to grow in conservation (CBCG member).

Eighty-six percent of respondents stated that their CBCG liaises or collaborates with local and regional council, 4% said they don't and 10% were unsure. Most respondents believed that collaboration with

local and regional councils was important for the success of their group (m= 4.29 out of 5, where 1 is "not important" and 5 is "very important") (see Table 6.2). However, only 19% of respondents thought that there were ways to improve collaboration. More communication, an increase in funding and grants that aligned with the needs of CBCGs, building personal relationships with councillors, hiring more competent people, and for councils to be willing and able to make more of an effort to help CBCGs were some of the ideas mentioned by respondents.

Fifty-seven percent of respondents identified that their CBCG liaises or collaborates with the Department of Conservation, 12% said they don't and 32% were unsure. With respondents stating that collaboration was important (m= 3.97 out of 5) (see Table 6.2). Only 14% of respondents thought something can be done to increase collaboration. Some ideas mentioned by respondents include better communication, more support programmes, ensuring competent people are in charge, and for DOC to listen to CBCGs and allow them to have a say in decisions in the planning stage of local conservation initiatives.

Fifty-four percent of respondents stated that their CBCG liaises or collaborates with local iwi, 19% stated that their CBCG doesn't and 26% were unsure. Only 17% of respondents believed that an increase in collaboration with iwi is possible; they mentioned that some ways collaboration could be improved included having more patience, time and understanding towards each other, having local iwi on board, and taking time to build relationships between iwi and CBCGs.

Table 6.2 The average perceived importance of collaboration with government agencies of respondents, where 1 is not important and 5 is very important (N=70).

	Mean	Standard deviation	Variance
Local and regional council	4.29	1.14	1.29
Department of Conservation	3.97	1.29	1.65

6.4.6 Community-based environmental monitoring

Questionnaire respondents were asked "As far as you know does your environmental group/s carry out any sort of monitoring? If yes, what type of monitoring?" Fifty-six percent of respondents stated that their CBCG carried out some form of monitoring. However, only 33% of respondents reported being personally involved in any monitoring. Respondents also displayed varying understandings of what monitoring involves, with some respondents stating that they observed but never took notes or collected any sort of data. The most frequently mentioned types of community-based environmental monitoring were recording the number of pests caught in traps, undertaking bird counts, monitoring plant survival rates, counting and classifying rubbish collected from streams, undertaking pest monitoring (e.g. using tracking tunnels), monitoring native bird recovery rates, undertaking water quality tests, and monitoring plant growth (Table 6.3).

Table 6.3 Types of community based environmental monitoring carried out by CBCGs in the Manawatū.

Types of CBEM	Number of volunteers that stated they participate
Pest trapping	15
Bird counts	12
Plant survival rates	11
Pest monitoring	9
Rubbish collection	6
Bird health	6
Plant growth	5
Water quality	4
Plant numbers	3
Butterfly tagging	2
Succession of plants	1
Dune regression	1
Peat control	1
Bird survival rates	1
Soil testing	1
Total	78

Overall respondents who were involved in community-based environmental monitoring found it enjoyable with an average of 3.91 out of 5 (where 1 is “not enjoyable” and 5 is “very enjoyable”).

Interviewees were also asked about environmental monitoring, and it was clear that many CBCGs were not involved in environmental monitoring and that there was a need for more CBCGs to get involved:

> Citizen science is not viewed highly at all (CBCG employee).
>
> We need to be actively monitoring those trees that we put in. We want to be as sure as we can that we are achieving our aim, which is basically biodiversity (CBCG leader).
>
> We could do so much more, in terms of monitoring, particularly in terms of the trees they plant (CBCG volunteer).

6.5 Discussion

This section discusses the key barriers to effective CBC identified above, namely, challenges associated with volunteer recruitment; barriers to volunteering and how they can be mitigated; building and maintaining relationships with stakeholders and the importance of community-based environmental monitoring.

6.5.1 Volunteer recruitment

A key barrier to effective CBC is volunteer recruitment, due to the sometimes sporadic nature of volunteer participation. For many groups, high volunteer turnover means there is a need for ongoing recruitment of volunteers. New volunteers can help to can expand the efforts of the group, help reduce burn out by allowing volunteers to step back when needed, and therefore have a positive impact on the success of CBC (Forgie *et al.* 2001). This is not true for all CBCGs as it is common for CBCGs to have a committed core group of volunteers who maintain a successful CBCG without the need for additional volunteers. However, it is nonetheless important to understand what recruitment

methods are the most likely to attract new volunteers (Bushway *et al.* 2011; Frensley *et al.* 2017; Ding and Schuett 2020; Thomas *et al.* 2021). The top recruitment method reported by our respondents was social interaction with an existing volunteer, however, it only accounted for a quarter of individuals and other methods also played a key role in recruiting volunteers. A study by Heimann and Medvecky (2022) found that just over 64% of their volunteers were recruited by a social interaction (either hearing about the opportunity through personal contacts, or being actively recruited by a member), rather than an advertisement. A study by Ding and Schuett (2020) had similar findings and stated that a personal request by a volunteer and a positive atmosphere for communication were key in recruiting new volunteers. Employing a variety of approaches to recruit volunteers would likely be beneficial for CBCGs in the Manawatū and elsewhere.

Volunteer recruitment and turnover is an issue for many environmental groups that rely on volunteers (Bushway *et al.* 2011; Asah and Blahna 2013; Higgins and Shackleton 2015; Frensley *et al.* 2017; Hvenegaard and Perkins 2019; Ding and Schuett 2020), with some studies finding that turnover is increased with higher proportions of older volunteers (Hvenegaard and Perkins 2019). For example, in a study by Hvenegaard and Perkins (2019) which looked at recruitment in volunteers who walked trails and maintained Bluebird nest boxes only 18% had successfully recruited someone to take over their trail and 14% were not going to attempt to recruit another volunteer. CBCGs would benefit from having a succession plan in place for both volunteers and leaders, so that if volunteers do leave there is someone to replace them. This is particularly important for predator trapping, as if traps are not cleared and reset regularly mammalian predators will re-inhabit the area. There are a range of factors that may hinder the ability of CBCGs to recruit new volunteers, and it is crucial that co-ordinators understand these barriers to volunteer participation so they can be mitigated (Bushway *et al.* 2011; Higgins and Shackleton 2015). Lack of time is a major barrier to volunteering, in our study and other studies (Higgins and Shackleton 2015; Frensley *et al.* 2017; Hvenegaard and Perkins 2019), and there is often a conflict between family and work commitments and volunteering. In order for an individual

to consider volunteering they must have enough energy and time to spare and be able to fit volunteering around other commitments. Volunteer expectations can also impact recruitment, as it is necessary to promote the positive side of volunteering to attract volunteers, however it is also important that expectations are realistic so volunteers do not leave when they experience the mundane or negative aspects of volunteering (Measham and Barnett 2008; Kramer and Lewis 2020). Other individuals' views can also impact the ability to recruit volunteers, as close family and friends could be supportive and encourage volunteering or hinder and cast doubt on the matter (Kramer and Lewis 2020). In order to address these issues it is important that communication with potential volunteers portrays volunteering work as a meaningful and purposeful experience and promotes flexibility in commitment and roles to work around other commitments (Hong and Morrow-Howell 2013; Kramer and Lewis 2020).

There are a variety of methods to help improve recruitment rates mentioned in the literature. Targeting specific demographic groups is identified as one way to bolster recruitment. A study by Ding and Schuett (2020) found that there is a peak in generative concern in middle age, and so suggested that targeting middle aged and older individuals would increase recruitment rates. Targeting a specific age group means that recruitment methods can be delivered in a way that specifically attracts that demographic. Aligning volunteering tasks with volunteer motivations has also been identified by several studies to have a positive impact on recruitment, especially recruitment of individuals with diverse interests and backgrounds (Bushway *et al.* 2011; Higgins and Shackleton 2015; Frensley *et al.* 2017). Conservation initiatives that are intertwined with prominent issues in the community, and complement individual's interests and previous experiences can also help promote participation in CBC (Bonney *et al.* 2009; Frensley *et al.* 2017). One way of achieving this may be to work together with other local groups or an umbrella group (such as ENM) so that potential volunteers could be directed towards a group that matches their interests, skill set, availability and motivations.

6.5.2 Barriers to community-based conservation volunteering

While volunteer recruitment is essential, it is even more desirable to retain current volunteers instead of constantly having to find and train new individuals. The most commonly mentioned barrier by CBC volunteers in the Manawatū was time, which consists of a few aspects including time taken to travel to the volunteering site, the time the volunteering tasks take, and the timing of working bees and events. Time has also been identified as a key barrier in a number of previous studies. Hvenegaard and Perkins (2019), Higgins and Shackleton (2015) and Frensley et al (2017) all stated that time commitment was one of the top barriers to volunteering. A high proportion of volunteers in the Hvenegaard and Perkins (2019) study stated that time was a key barrier to commitment, and time was noted as a top reason for dropping out of the project in Frensley et al's (2017) study.

Managers of CBCGs can try to address this challenge by setting clear expected time frames, and by providing different options for involvement (Frensley *et al.* 2017), including options to volunteer at a variety of times, and to have volunteering opportunities that vary in length of time. With small CBCGs it may be worth working with other groups in order to be able to provide these options. If a volunteer site is some distance from a township, transport could be provided to encourage more volunteers to attend. Offering volunteers a variety of options in terms of when, and for how long they can participate will allow volunteers who have limited time to still make a contribution, and may help reduce turnover rates (Hong and Morrow-Howell 2013; Higgins and Shackleton 2015; Frensley *et al.* 2017).

Health benefits to volunteers are frequently mentioned in the literature around environmental volunteering (O'Brien *et al.* 2010; Hobbs and White 2012; Zuo *et al.* 2016; Patrick *et al.* 2021; Chen *et al.* 2022). However, health issues are also a significant barrier especially given the high number of older volunteers. Given the high proportion of older volunteers', it was unsurprising that issues around health were often mentioned as a barrier to volunteering in CBCs in the Manawatū. A study by Hvenegaard and Perkins (2019) stated that poor mobility, getting older and even death were mentioned by volunteers as reasons to stop volunteering. Another study by Pope (2005) also found

that poor health was a barrier to environmental volunteering. Therefore, it is important that there are options in place to help individuals with health issues or declining health to continue to volunteer. CBCGs could encourage volunteering in individuals with health issues by being flexible in commitment levels (Hvenegaard and Perkins 2019), supporting volunteers reducing volunteering hours (Hvenegaard and Perkins 2019), offering a range of tasks which include non-physical options, and being aware of changes in volunteer motivations over time (Bramston *et al.* 2011; Frensley *et al.* 2017; Pagès *et al.* 2018; Schild 2018; Larson *et al.* 2020).

Several of the groups in the Manawatū already have a range of tasks which allows older or mobility limited people to continue to volunteer. If volunteers are supported and offered alternative tasks it means that they can still make a contribution and feel useful, and are therefore more likely to continue to volunteer. Being understanding of individual's situation and having a diverse group of volunteers would also be helpful in reducing the impact of individuals with health issues. If individuals needed to cut back on volunteering or change their role other volunteers would be able to cover, or swap tasks with them.

Simply using volunteers as a workforce is not enough to retain volunteers, leaders must be aware of volunteer motivations and take steps to prevent burnout and high turnover rates (Measham and Barnett 2008; Asah *et al.* 2014; Takase *et al.* 2019). Due to many CBCGs having a small number of volunteers, volunteers can often be overworked, have limited support, feel obligated to participate, and have limited training opportunities, leading to an increase in volunteers burning out and/or leaving (Frensley *et al.* 2017; Schild 2018; Takase *et al.* 2019; Ganzevoort and van den Born 2020). Just over 40% of respondents knew someone who had stopped volunteering; some of the top mentioned reasons were increasing hours at work, health issues, lack of appreciation and the breakdown of relationships. Being aware of key reasons why people decide to stop volunteering, can allow CBCG leaders and environmental agencies to mitigate this issues. For example, "lack of appreciation" can be addressed by having an appreciation plan in place where each volunteer is individually thanked after

volunteering either in person or via an email, or a thank-you afternoon tea could be held a few times a year to thank all volunteers.

Like many CBCGs around the world, most of the CBCGs in the Manawatū are quite small and tend to be kept alive by one or two committed volunteers. While these individuals deserve to be recognised and applauded for all their hard work, they also need other volunteers to step in to give them regular breaks and additional volunteers with the knowledge and skills to take over when they want to take on a less committed role. The literature identifies several challenges around leadership succession in CBCGs (Froelich *et al.* 2011; Pagès *et al.* 2018; H. Li 2019). The succession of leaders is important, and has been identified as a reason why volunteer groups disband. CBCGs need to be able to anticipate and manage the succession of leaders by having a plan in place to effectively prepare for leadership transition and development (Froelich *et al.* 2011; H. Li 2019). In order for leaders to have the ability to take the time to support volunteers and make them feel satisfied, they also need to be supported and have volunteers that can assume leadership roles as required.

Future leaders can be recruited from within or outside of a CBCG, and depending on the size of the group it may be the responsibility of the current leader, management, or board members to recruit a future leader (Johnson 2022). Time and effort must be put into developing or finding future leaders. One way of achieving this is for current leaders to empower prospective leaders by listening to their needs and working alongside them as role models (Johnson 2022; Froelich *et al*. 2011). Smaller CBCGs often do not have the capacity to train new leaders and therefore will recruit outsiders to fill a gap in leadership (Johnston 2022). Another way to reduce the impact of leadership succession is to have multiple leaders who work together, to achieve group goals and train volunteers (Johnson 2022; Froelich *et al*. 2011). It is key that there is open dialogue between current leaders, prospective leaders and management to ensure a smooth transition (Johnson 2022).

6.5.3 Relationships between community-based conservation groups, local council and other stakeholders

Multiple groups are involved in conservation in Aotearoa New Zealand, including local residents, iwi, NGO's and government organisations (Forgie *et al.* 2001; Wilson 2005; Peters *et al.* 2015a). Relationships between these groups are important, as CBCGs often rely on other groups and organisations for funding, technical support, and education. These groups often have differing views of conservation, and incorporating multiple perspectives can impact the success of conservation initiatives (Forgie *et al.* 2001).

Local councils play an important supporting role to CBC, by facilitating increased cooperation and communication between CBCGs, and providing practical guidance and financial support. Horizons Regional Council's stated goal is to "work in partnership with our communities to protect and enhance our patch of native New Zealand", by working alongside communities to empower them to reconnect with, protect and enhance native areas including the Manawatū Gorge, Manawatū River and Totara Reserve (Horizons Regional Council 2024a). They offer a range of environmental education opportunities that aim to increase environmental knowledge and awareness of environmental issues, with the goal of fostering behaviors' and actions that lead to positive environmental change (Horizons Regional Council 2024b). Horizons also offers yearly funding for local community projects with environmental goals (Horizons Regional Council 2024a). The Palmerston North City Council (PNCC) "plays its part in regenerating biodiversity within its rohe[11] by re-establishing bush, particularly along walkways; controlling introduced predators; working in partnership with iwi; supporting community efforts" this is made possible by partnering with iwi and supporting CBCGs (Palmerston North City Council 2018, 2021). Our findings suggest PNCC has been successful in building relationships with CBCGs as the majority of local CBCGs (86%) have some form of collaboration with PNCC. These

[11] Rohe is the Māori word for boundary, district, region, territory, area, border (of land) (Moorfield, 2024).

relationships and partnerships have allowed PNCC to further suppress pests, increase riparian plantings at stream margins, plant native trees to attract birdlife into the city, enhance freshwater ecosystems, and protect more habitats of local significance. PNCC plan to incorporate Māori indigenous knowledge into council practice and ensure that iwi have a primary role in environment decision-making, and strengthen Māori involvement in conservation efforts (Palmerston North City Council 2018, 2021). However, there is still a need for better communication and relationships with CBCGS and local council. In order to strengthen the relationship between council and CBCGs, it is important that council have well-paid and properly trained staff in place to help CBCGs and that CBCGs are able to play a meaningful role in the initial decision-making around local conservation initiatives and projects. A positive example of the council working closely with the community is the PNCC working alongside ENM to distribute funding via the Environmental Initiatives Fund which provides local CBCGs with access to funding to carry out local conservation goals and in turn improve environmental outcomes in the Manawatū.

The Department of Conservation (DOC) is responsible for conserving Aotearoa New Zealand's natural and historic heritage (Department of Conservation 2023). DOC has an integrated ecosystem management framework for CBCGs which allows for coordination between different natural resource management agencies, and local communities across entire ecosystems. The key features of this type of management framework include: managing ecosystems as a whole, integrating legislative requirements of a range of natural resource management agencies, encouraging collaboration between government agencies, iwi and local communities and having adaptive approaches that can change depending on social, economic and cultural issues (Department of Conservation and Ministry for the Environment 2000; Forgie *et al.* 2001). Our research suggests that although in principle DOC promotes and supports collaboration with CBCGs there is limited practical support for CBC in the Manawatū, with just over half of the CBCGs in the Manawatū collaborating with DOC. Our research also pinpoints some key aspects that would improve communication between DOC and CBCGs

including allowing CBCGs to have more of a say in local conservation initiatives, increasing support and training programmes and having more on the ground technical support. There was also a desire from CBCG representatives to have more qualified people looking after CBCGs, and their volunteers. Forgie *et al.* (2001) argue that in order to get communities involved in solving environmental issues there needs to be a change in local communities' attitudes and behaviour. A collaborative approach which allows government agencies to act as stakeholders, creating a framework that encourages participation, and supporting and empowering CBC initiatives, allows communities to come together to decide values, goals and strategies for themselves meaning they are more likely to be committed to the cause. Addressing complex environmental issues is dependent on changing peoples' attitudes and behaviours in order to promote active engagement. Therefore, moving power away from government agencies allows communities to play a critical role in decision making and leads to communities becoming highly invested in positive environmental outcomes (Forgie *et al.* 2001).

The degree to which CBCGs in the Manawatū collaborate with iwi was found to be variable. This reflects the findings of a previous study by Peters *et al.* (2015a) which found that only 41% of CBCGs had received cultural advice from iwi and 22.3% of CBCGs wanted an increase in cultural advice by iwi. They also found that there was limited on-ground involvement in CBCGs by iwi with only 4.4% of groups having iwi contribute to on-ground work. However, it is important to note that many iwi have their own CBCGs that they operate on top of their obligations to manage a range of conservation decisions within their jurisdiction and their many other roles and responsibilities.

Iwi are crucial partners for many CBCGs and it is important that conservation projects take traditional knowledge and cultural values into account, and consider environmental issues that are relevant to Māori (Forgie *et al.* 2001). Walker et al. (2024) found that Māori were more likely to attend whānau[12],

[12] Whānau is the Māori word for extended family, family group, a familiar term of address to a number of people - the primary economic unit of traditional Māori society (Moorfield, 2024).

marae[13] and tribal restoration events than events run by councils or other forms of restoration events. They conclude that cultural and community connection are important drivers for participation in community-based conservation events, but found that these drivers are often under recognised.

An increased recognition of the importance of cultural and community connection and the common interests of Māori and the wider community would help to promote partnerships between CBCGs and iwi by encouraging collaboration to address local conservation issues, and work together sharing the responsibility of managing local conservation areas (Roberts *et al.* 1995; Taiepa *et al.* 1997; Forgie *et al.* 2001)

6.5.4 Community-based environmental monitoring

Only a small proportion of New Zealand CBCGs carry out community-based environmental monitoring, in which they collect data around changes in ecosystem health, and species abundance and distribution (Peters *et al.* 2015; Peters *et al.* 2016). Community-based environmental monitoring has been found to be constrained by the availability of willing volunteers, the scientific literacy of volunteers and the need for some help with technical aspects (Peters *et al.* 2016). Some of the easier forms of monitoring tend to be more commonly carried out, including 5-minute bird calls and photo points (Peters *et al.* 2016). Five-minute bird calls were one of the top forms of community-based environmental monitoring in Manawatū CBCGs, along with other simple monitoring including pest trapping and tunnels, rubbish collection, plant survival and growth and water quality tests. Public awareness of a decline in freshwater health means that there tends to be an increased interest in water quality monitoring in CBCGs (Hughey *et al.* 2013; Peters *et al.* 2016). This is also the case in Manawatū CBCGs where there is a focus on the Manawatū river and its catchment. Another aspect of community-based environmental monitoring, which is common among New Zealand CBCGs, is bird

[13] Marae is the Māori word for courtyard - the open area in front of the wharenui, where formal greetings and discussions take place. Often also used to include the complex of buildings around the marae (Moorfield, 2024).

monitoring (Parker 2008; Peters *et al.* 2016) bird counts and health monitoring; these activities were also common within CBCGs in the Manawatū.

In order to achieve their conservation goals, many of CBCGs in Aotearoa New Zealand rely on funding from project partners which can include, government resource management agencies, NGOs, science organisations, iwi, and local businesses (Hardie-Boys 2010; Jones and McNamara 2014; Peters *et al.* 2015; Peters *et al.* 2015a; Peters *et al.* 2016; Sullivan and Molles 2016). These project partners often require evidence of successful conservation outcomes; to obtain this evidence CBCGs often need to carry out some form of monitoring to receive further funding (Jones and Kirk 2018). In previous studies it was found that most data collected by CBCGs was used to help guide their environmental projects, and that their data was often aligned with the requirements of funders for applications and reporting back (Peters *et al.* 2015; Peters *et al.* 2015a; Peters *et al.* 2016). Yet it was also found that there is often no comprehensive planning or milestones to demonstrate successfulness or progress (Peters *et al.* 2015; Galbraith *et al.* 2016). Sullivan and Molles (2016) argued that having planned community-based environmental monitoring for CBCGs would improve future projects and increase the likelihood of funding, as many funding agencies require proof of success. A high proportion of the CBCGs in the Manawatū carry out limited or no community-based environmental monitoring, therefore it would be beneficial to many of the CBCGs to carry out planned community-based environmental monitoring to track success and increase the chances of receiving funding for future conservation goals.

An increased awareness of the need for broader and longer term monitoring in Aotearoa New Zealand, means there is a reliance on CBCGs to contribute to local, regional and national conservation goals (Lee *et al.* 2005; Peters *et al.* 2015; Sullivan and Molles 2016). CBCGs are able to collect more data than government agencies alone and can therefore supplement data collection (Peters *et al.* 2015). Community-based environmental monitoring has been shown to improve ecological knowledge within a community, and encourage relationships between CBCG members, project partners and the wider community. However, research also suggests that in order for this to happen CBCG volunteers

need increased support from government agencies to increase their ability to monitor their own projects (Peters *et al.* 2015a). In order to further increase community-based environmental monitoring, DOC and local councils have a critical role to play to ensure that CBCGs have the knowledge and skills to carry out conservation activities and environmental monitoring (Department of Conservation and Ministry of Environment 2000); this could be achieved by an increase in training courses and education around local conservation issues. Without considerable advice and technical support, community-based environmental monitoring can be challenging for CBCGs to undertake effectively (Galbraith *et al.* 2016). Increasing community-based environmental monitoring has the potential to have a positive impact on both conservation goals and volunteer participation. Community-based environmental monitoring could be a constructive alternative for volunteers that are not physically able to participate in the more strenuous activities typically undertaken by CBCGs, and may provide a stimulating task for volunteers that are motivated by learning and prefer to avoid tasks that are repetitive and mundane such as weeding and planting. Another benefit of incorporating community-based environmental monitoring could be to attract another demographic of volunteers, such as secondary or tertiary science students for whom contributing to community-based environmental monitoring could provide a mutually beneficial opportunity.

6.6 Conclusion

This study examines the barriers to effective CBC and contributes to the understanding of the challenges associated with CBC volunteering, and the impact that volunteer motivations have on the continued participation of volunteers. In order for CBCGs to be successful they must be able to recruit and retain volunteers. Our study suggests that social interaction is the most productive way to recruit new volunteers, while highlighting the value in utilising a variety of recruitment methods. While volunteer recruitment is crucial to growth, it is even more important to retain current volunteers. In order to achieve this, CBCG leaders and partners such as local councils and the Department of Conservation need to consider barriers to volunteering in the planning stages of conservation projects

and programmes. The two main barriers we found were time constraints and declining health. Some ways CBCG leaders and management can help mitigate these barriers includes clearly communicating time commitments ahead of time, being flexible and offering volunteers a range of commitment levels, providing a range of tasks (including non-physical options), supporting volunteers to change commitment levels, and attempting to recruit a diverse group of volunteers to reduce the impact of age-related health issues on volunteer retention. CBCGs should also encourage their volunteers to build relationships with each other, in order to reduce conflicts and volunteer dissatisfaction.

Building connections with local councils, NGOs, iwi and other CBCGs is also important as they provide crucial support to help ensure successful and effective CBC. A collaborative approach creates a framework that encourages participation by supporting and empowering CBCGs, allows communities to work together on conservation initiatives, and can increase volunteer commitment (Forgie *et al.* 2001). There is also a need for increased recognition of the importance of Māori culture and interests to help promote collaboration with local iwi within CBC (; Taiepa *et al.* 1997; Forgie *et al.* 2001).

It was found that although some CBCGs carry out some monitoring including monitoring pest trapping and tunnels, rubbish collection, plant survival and growth and water quality tests, community-based environmental monitoring is currently limited in the Manawatū. It is important that local councils and the Department of Conservation encourage and support community-based environmental monitoring to provide the evidence of successful conservation outcomes that are needed to obtain and maintain funding, and to contribute to understanding and enhancing local and regional conservation outcomes. In order to increase community-based environmental monitoring, CBCGs need additional support from local and central government, including education, training programmes and on the ground technical support to develop the knowledge and skills to carry out reliable community-based environmental monitoring. There is also scope for further networking and collaboration between CBCGs within and between regions to learn from each other and leverage the collective expertise of experienced volunteers and employees.

7. DISCUSSION AND CONLCUSION

This chapter discusses the key themes identified within Chapters 3 - 6 within the broader context of the literature and considers the implications for CBC within Aotearoa New Zealand and internationally. First, section 7.1 will address the first research questions: what motivates people to participate in community-based conservation? Next, section 7.2 will consider the second research question: what motivates people to be committed to community-based conservation? Section 7.3 will then explore the third research question: what are the barriers to recruiting and retaining community-based conservation volunteers? Section 7.4 will address the fourth research question: what can be done to encourage more public participation in community-based conservation? And finally, Section 7.5 will draw conclusions and consider possible avenues for future research.

7.1 What motivates people to participate in community-based conservation?

Given that volunteers are crucial for successful CBC, understanding what motivates people to participate is important as it enables project managers to improve recruitment and retention of volunteers. Project managers that have an understanding of volunteer motivations can use key motivation factors to modify projects to fulfil specific motivation factors thus encouraging more volunteers to participate.

As discussed in Chapter 3, the top motivation factor for CBC in the Manawatū is “to care for the environment”, with 71% of respondents stating it was a very important factor to initial volunteering and 69% as a factor to continue volunteering. Being motivated by a desire to help the environment has been found as the top motivational factor in many other studies investigating CBC and environmental volunteering more broadly. For example, Alender (2016) examined the motivations of volunteer water quality monitors, and found that the top motivation to participate was a desire to

help or enhance the environment followed by helping the community and contributing to scientific knowledge. Another study carried out by Bruyere and Rappe (2007) which investigated the motivation factors of volunteers of 6 national resource organisations in America, had similar findings with volunteers being highly motivated by a desire to help the environment. A recent study in Aotearoa New Zealand by Heimann and Medvecky (2022b) also found that conservation volunteers were motivated by a desire to help the environment and a feeling of responsibility towards the environment, in line with the Māori concept of kaitiakitanga. Overall, the results of previous studies show that helping the environment is a key motivation factor across a range of studies in a variety of countries and types of environmental volunteering (e.g. Akin, Shaw, Stepenuck, & Goers, 2013; Alender, 2016; Bruyere & Rappe, 2007; Gratzer & Brodschneider, 2021; Heimann & Medvecky, 2022b; Pagès, Fischer, & van der Wal, 2018; Ryan, Kaplan, & Grese, 2001; Thomas, Cullen, O'Leary, Wilson, & Fitzsimons, 2021).

In terms of the motivation factor “to care for the environment”, volunteers are seeking an experience where they are able to contribute to enhancing or helping the environment. Therefore, projects should have a clear focus on the natural environment. The positive impact that the project has on the environment, and its environmental significance need to be clearly explained to volunteers, so they understand how their efforts directly contribute to addressing local conservation issues. The tangibility of CBC volunteering means that volunteers can often see their progress towards achieving conservation goals at the end of each volunteering event, which hopefully encourages them to continue volunteering. Managers should identify projects that have, or modify projects to have, an obvious positive impact on the environment and be able to explain that impact clearly to their volunteers.

Understanding the specific top motivations of CBC volunteering, also allows managers to incorporate key motivations into the planning stage of a conservation project and have goals based on motivations that are most relevant to their volunteers, in turn increasing volunteer recruitment and retention.

Even though, “to help the environment” has been found to be the most important motivation factor among CBC volunteers in the Manawatū, and in similar studies in a range of other countries, it is still useful to include other motivation factors into project design as well. Volunteer motivations differ between individuals, and it is therefore important to cater for a range of motivation factors within projects.

Within the Manawatū “to help the local community” was the second most important motivation factor among CBC volunteers, with 44% of respondents stating it was very important initially and 52% stating it was very important for continued volunteering. Helping others has been found to be an important motivation factor for both CBC volunteering and other types of volunteering internationally. In general volunteering there tends to be an emphasis on altruism and helping others as an important motivation factor to participate. This is often linked to the values function which describes individuals who volunteer as wanting “to express values related to altruistic and humanitarian concerns for others” (Clary et al., 1998 p.1517). A study by Boz and Palaz (2007) found that altruist motivations, such as helping others, were the most important motivational factors for community volunteers in Turkey, followed by affiliation and personal improvement. A study by Gage and Thapa (2012) investigating the motivations of college students to participate in volunteering in the United States found that the strongest motivation factors were those that related to helping others and expanding ones’ perspective. Corporate volunteering has also been found to place high importance on helping others, as a study by Cláudia Nave and do Paço (2013) found that the main motivation for employees to participate in corporate volunteering was due to an altruistic concern for others followed by an acquisition of knowledge and skills.

CBC initiatives are becoming increasingly important aspects of sustainable community development plans and strategies, especially in low-income areas (Hamstead & Quinn, 2005; Hess & Winner, 2007; Holland, 2004). A study by Ohmer, Meadowcroft, Freed, and Lewis (2009) investigated the benefits of a community conservation programme that plants gardens in low-income neighbourhoods. They

found that the program helped restore neighbourhood green spaces, and had a positive impact on the beliefs and behaviours of the surrounding local community on conservation issues, as well as contributing to a sense of community and volunteerism. The volunteers were highly motivated "to beautify and give back to the community" and "to support conservation of green space". Within the Manawatū there are a few CBCGs that have conservation goals that are more about the positive impacts that their green space can have on the local community, rather than specific conservation outcomes. These CBCGs have created green spaces for the local community to enjoy, and use for recreation. Green spaces in urban environments are extremely important and provide many benefits for local communities. Previous research has found that green spaces help to facilitate social interactions between locals, improve community involvement, increase feelings of safety, and engage locals in conservation practices, positively impacting overall community development (Glover, Shinew, & Parry, 2005; Ohmer et al., 2009; Saldivar-Tanaka & Krasny, 2004).

The development of CBC volunteering sites within urban areas are therefore an important method to improve the overall vitality of communities, especially in low-income communities and government housing areas, that often lack recreational green spaces and community gardens. An example of this in the Manawatū is Pit Park People, a CBCG that have worked in partnership with PNCC since 1999 to revive an old quarry into a green space for the neighbourhood, by planting native seedlings and creating walkways over a small wetland. The local council was originally against this idea and wanted the space to be used for car racing or as a sports field even though it wasn't what the community wanted or needed. After over 20 years of discussions, the council finally allowed the development of a recreational green space that is now used by people who work in the area and by the surrounding community, which is mostly government housing with a high proportion of refugees. Pit Park People has volunteers from an array of cultures that volunteer in the pit and many use it as a way to integrate into the community, and meet their neighbours.

Few young people tend to volunteer for Manawatū CBCGs (only 14% of volunteers are under 29 years of age). However, with three large tertiary education institutions in the Manawatū, there is a large pool of young people who could be targeted to increase volunteer numbers and sustain CBC volunteering in the future. Some ways of achieving this have been addressed in the discussion section of Chapter 4, such as emphasizing the value of volunteering to advance their career and promoting volunteering as a way to develop valuable skills in a wide range of disciplines, undertake networking and access potential references for employment.

Younger volunteers have been found to have different motivations and preferences than older volunteers (Alender, 2016; Gratzer & Brodschneider, 2021; Thomas et al., 2021). Several studies have found that younger volunteers tend to be motivated by career-based motivations. A study by Alender (2016) found that the importance of career-based motivation factors of environmental volunteers decreased with increasing age, and a desire for volunteers to increase their reputation within their community was also of greater importance to young volunteers. Another study by Thomas et al. (2021) found that 18-34 year olds rated work experience as a motivation higher than all other age groups. Career-based motivations were also found to be more important to younger volunteers when compared to over 60 year olds in a study by Gratzer and Brodschneider (2021) exploring the motivations of citizen scientists. This is in line with the research in which 100% of volunteers over 65 rated “to advance my career” as not important (with 80% of 60-64 year olds and 70% of 50-59 year olds also rated it as unimportant), whereas 0% of volunteers under 20 rated “to advance my career” as not important. In this context, CBC managers could consider incorporating some aspect of work experience into CBC projects to attract more young volunteers.

A series of studies in the United States have found that volunteering is associated with a set of desirable skills, including leadership, self-confidence, critical thinking, academic development and conflict resolution (Astin & Sax, 1998; Cress & Sax, 1998; Sax, Astin, & Avalos, 1999). Volunteering has been shown to improve the likelihood of employment and enhance career prospects in countries that

place high value on volunteering (e.g. United States and Canada) as it acts as a positive signal to employers, so young people are more inclined to engage in volunteering to improve employability, and get better jobs over non-volunteers (Bocsi et al., 2017; Gomez & Gunderson, 2003; Prouteau & Wolff, 2006; Segal & Weisbrod, 2002). In this context, Handy et al. (2010) found that student volunteering rates are significantly higher in countries where volunteering was valued and seen as a benefit to future employment.

Within Aotearoa New Zealand there is a substantial level of importance placed on volunteering, "with a rich tradition of community engagement, Kiwis have fostered a culture that recognizes the immense value of volunteer work" (Woburn International Group, 2023 p.1). Research also shows that volunteering can have a positive impact on employability; 75% of hiring staff state that volunteering experience, especially in a related field, is beneficial in acquiring a job (Seek Volunteer, 2024). Volunteering can help develop transferable skills, and gain soft skills, which is of high importance to managers when considering applicants at the entry level and those changing career (Seek Volunteer, 2024; Volunteering Waikato, 2024).

Young volunteers are a valuable part of future CBC, and conservation management. Therefore, local governments, CBCGs and NGOs should be encouraging young people to get involved in conservation efforts by providing education and opportunities for young people. In order to maximise the benefits young volunteers can provide for CBC programmes stakeholders should have a clear understanding of the motivation factors that encourage young people to participate in CBC, such as career-based and environmental motivation factors. It is also important to understand the extrinsic factors, such as media coverage, incentives and social influences, that impact young people (Rahman & Rahman, 2021). For example, it has been shown that young people's involvement in CBC is influenced by their peers, parents, extended family, teachers, and other role models within their life (Culiberg & Elgaaied-Gambier, 2016; Law, Shek, & Ma, 2013). Taking both intrinsic (motivation which comes from an internal desire to accomplish a goal) and extrinsic motivations (motivation which comes from external

rewards or praise) into account should help to promote and maintain young volunteers, improving future participation of community involvement in CBC.

CBCGs and other NGOs play a crucial role in providing opportunities for young people to get involved in local conservation initiatives and educating them about local conservation and environmental issues. However, as mentioned in interviews, these groups often have limited time and resources to train new volunteers and can therefore be discouraged by the high turnover rates of young adults. Local and national government support is also necessary to promote CBC and facilitate cooperation with local groups to increase the engagement of volunteers with these groups. The incorporation of environmental issues into education is also a key role needed by government to trigger environmental awareness and encourage environmental experiences in young people, which has been found to promote future volunteering (Rahman & Rahman, 2021; Enviroschool, 2023). Managers need to recruit younger people differently from how they would recruit older people, and they need to be aware that differences in motivations change over time as the volunteers become older (Handy et al., 2010; Rahman & Rahman, 2021).

Individuals are motivated to participate in CBC by a range of extrinsic and intrinsic motivation factors that are unique to each individual, can change over time and are dependent on a range of demographics, experiences, and behaviours. Understanding motivation factors that are more prevalent in particular groups of volunteers or types of volunteering can allow managers of CBCGs to design conservation initiatives with aspects that will attract and sustain a particular set of volunteers.

7.2 What motivates people to be committed to community-based conservation?

Conservation initiatives benefit more from committed volunteers than sporadic volunteers (Akin, Shaw, Stepenuck, & Goers, 2013; Montada, Kals, & Becker, 2007). It is therefore essential to understand the factors that impact on volunteers' long term involvement in CBC volunteering. The

research identified that there is not only a need for more volunteers, but a particular need for committed volunteers. There seems to be no consensus in the literature on the motivation factors of committed volunteers. A study by Asah and Blahna (2013) found that personal, social and community based motivations were more important than environmental motivations to committed volunteers. Whereas, a study by Akin et al. (2013) found that contributions to conservation were a key motivation, and Ryan, Kaplan, and Grese (2001) argue that committed volunteers are motivated by a well-run organisation, social aspects and feeling needed. However, it has been suggested that volunteers tend to be driven to continue volunteering when they receive benefits linked to their key motivation factors (Alender, 2016; Clary et al., 1998), so to increase the likelihood of committed volunteers it is necessary to understand the key motivations within a particular CBCG, or group of local CBCGs. The top motivations for committed volunteers in the Manawatū were "to care for the environment" and "to help the local community".

A significant challenge for CBC, and volunteering in general, is to maintain volunteer numbers by ensuring that volunteers are satisfied and committed to the cause (Vecina, Chacón, Marzana, & Marta, 2013). There have been a series of studies which use social-psychological theories to attempt to explain the commitment of volunteers by examining how attitudes predict behaviours (e.g. theory of planned behaviour). A study by Montada et al. (2007) investigated "characteristic motivational factors that either facilitate or interfere with involvement" (p.288) and discovered that a series of variables were often correlated with volunteer commitment. These variables included: awareness of a problem or need, awareness of a violation of justice, and a sense of personal responsibility and self-efficacy. Previous research has shown an increase in participation behaviours due to increased self-efficacy in health-related volunteering (Wang et al., 2011), community service (Harp, Scherer, & Allen, 2017), and environmental volunteering (Akin et al., 2013; Gulliver, Fielding, & Louis, 2022). In terms of environmental volunteering, Akin et al. (2013) and Gulliver et al. (2022) found that a volunteer's perception of self-efficacy was a significant predictor of volunteer commitment, and that higher self-

efficacy led to increased participation and greater engagement in leadership behaviours, respectively. Where self-efficacy was defined as an "individual's confidence in their ability to engage in a particular behaviour, with higher self-efficacy perceptions related to stronger intentions to undertake that behaviour" (Gulliver et al., 2022 p.4). Gulliver et al. (2022) stated that volunteers who reported an increase in engagement in volunteer leadership behaviours had higher self-efficacy perceptions, suggesting that volunteer engagement is linked to whether or not individuals think they have the skills and abilities to take action and complete a task. In light of this, if individuals regard themselves as capable, effective volunteers it is more likely that they will continue to volunteer, and may even consider a leadership role. In order to promote self-efficacy, which in turn will increase volunteer retention and commitment, it is important to provide volunteers with ongoing training opportunities to improve skills and abilities, as this is often stated as a barrier to high self-efficacy (Gulliver et al., 2022), and to show personal recognition for volunteer efforts. An increase in programme efficacy has been shown to lead to an increase in the self-efficacy of their volunteers, so if a programme or conservation initiative is deemed successful at meeting goals by its volunteers, it is more likely that their volunteers will feel effective and empowered (Akin et al., 2013; Montada et al., 2007). Communicating clear goals and showing how they have been achieved will in turn improve volunteer commitment. However, it has also been demonstrated that the act of volunteering itself can also have a positive impact on self-efficacy (Schild, 2018), so in some instances simply encouraging individuals to get involved could lead to committed volunteers.

Awareness of a problem or need has been found to be correlated with volunteer commitment. However, in the Manawatū there seems to be a lack of awareness of local CBC initiatives, and volunteering opportunities. Despite studying ecology and zoology as an undergraduate student, I personally was completely unaware of any CBCGs within the Manawatū until I began researching my PhD topic, even though I had studied relevant subjects. When I asked my colleagues, friends and family, there was also minimal, if any, real awareness of these groups of the opportunity to participate

in local conservation initiatives. This anecdotal evidence reflects the findings of a study by Fitchman (2007) that investigated public conservation awareness within the Waikato region of Aotearoa New Zealand. Fitchman (2007) found that although respondents had a good understanding of national conservation issues and displayed positive attitudes towards conservation in general, they tended to have a low level of awareness of local conservation issues. A lack of awareness of local CBC is a major concern, but also a major opportunity. It is likely that in the Manawatū there is a similar limited awareness of local conservation and that many individuals have no idea they could contribute to a worthwhile cause like CBC, and hence there could be a large pool of individuals to target for future CBC volunteering. Therefore, increasing awareness of local conservation issues and volunteering opportunities within the general public could potentially improve CBC volunteer numbers (Seabrook-Davison & Brunton, 2014). This could be achieved through raising awareness of environmental issues and volunteering opportunities through a range of platforms including local media (e.g. the local newspaper and radio stations), social media, word of mouth, and local environmental events.

Volunteer recognition is an important part of volunteer engagement, and there is a need to find personalised ways to show appreciation for volunteer efforts and to increase public awareness of volunteer contributions, especially those that impact the local community (Akin et al., 2013; Ryan et al., 2001; Volunteer Canada, 2013). Volunteer Canada (2013) carried out two surveys to investigate volunteer recognition preferences. They concluded that the top way the volunteers wanted to be recognised was to be thanked by the organisation in-person on an ongoing, informal basis. Volunteers also stated that they would appreciate being informed about how their efforts had made a difference. These findings are similar to a variety of other studies (e.g. Gulliver et al., 2022; Hvenegaard & Perkins, 2019). Volunteer recognition is crucial as it can improve the mood of the volunteers, promote volunteer satisfaction, increase volunteer engagement, have a positive impact on volunteering organisations reputations and ultimately reduce volunteer turnover (Volunteer Canada, 2013; Volunteering New Zealand, 2024).

One way to improve volunteer recognition in CBC is to have a volunteer recognition plan in place with clear goals and objectives. In order to do this, CBCG leaders will need to understand the personal needs of volunteers and their expectations along with their motivations and background, so that recognition can be individually tailored to a CBCG's specific volunteers (Volunteering New Zealand, 2024). The interviews and questionnaire revealed that volunteers placed value on feeling needed and that they were helping a worthwhile cause, therefore one way to show recognition would be to clearly explain the positive impacts that their efforts have on local conservation and their local volunteering site more specifically (e.g. the return of native birds into the native bush remnant or the impact of reduced predators on native species). Some ideas for simple but effective recognition are to say thank you to each volunteer in-person, send out thank you emails after each working bee or event, regularly inform volunteers of the impact of their efforts, and plan a BBQ or small get together.

A key problem with CBC in the Manawatū, which has also been mentioned in other studies, is leader succession. Volunteers mentioned in both the interviews and the questionnaire that there are a few key individuals that keep CBC in the Manawatū going, and there are the same few people at most events. These key people are involved in multiple groups and without them it is likely some CBCGs would cease to exist. The leaders of CBCGs in the Manawatū are incredible individuals who are highly committed to local conservation, and put significant amounts of time and energy into CBC. However, they need other volunteers to come alongside them and be willing to take on some management roles so that when the time comes there are individuals ready to take on a leadership role and continue to lead CBCG. In order for CBCGs to be successful long-term, avoid the burn-out of leaders, and reduce leader turnover it is important that committed volunteers are encouraged to take leadership or management roles. A series of studies have stated that it is important to give volunteers the opportunity for ongoing training and education, and to have their efforts recognised so individuals are more likely to want to be involved in leadership roles (Frensley et al., 2017; Gulliver et al., 2022; Hvenegaard & Perkins, 2019), which is currently lacking in CBCGs in the Manawatū.

Studies that discuss non-profit organisations (NPOs) and volunteering projects more generally have found that the high turnover of leaders is a potential limitation in many groups, and many NPOs are not substantially prepared to replace leaders, which can cause disruption to their running and therefore impact successfulness of achieving their goals (Johnson, 2022; Rendon, 2022; Santora, Caro, & Sarros, 2007). The literature pinpoints a few key reasons for leader turnover including, retirement, burnout, and job transitions (Johnson, 2022; Landles-Cobb, Kramer, & Milway, 2015; Rendon, 2022). In order to avoid disruption from leader turnover NPOs must be prepared for the inevitable. A few studies have stated that NPOs are often unprepared for leader succession (McKee & Froelich, 2016; Santora & Bozer, 2015; Santora et al., 2007; Stewart, 2016; Stewart, Adams, McMillian, & Burns, 2021). A study by Stewart et al. (2021) found that only 51% of NPOs had a succession plan in place, and other studies found it to be as low as 25% (Santora & Bozer, 2015; Stewart, 2016). This may be due to the fact that leadership training isn't treated as essential, there is limited funding, leaders don't have the skills to plan, and many leaders don't think about what happens after they leave (McKee & Froelich, 2016; Santora & Bozer, 2015).

There is a need to develop leaders within their volunteer pool and have a leadership development plan in place (Johnson, 2022; Santora & Bozer, 2015); this is not only important to build up new leaders but also to support the present leaders' growth as research by Landles-Cobb et al. (2015) has found that lack of support for leaders contributed to leader turnover. There are also a few studies that state the importance of NPO leadership being shared between multiple individuals instead of giving the entire role to one individual (Deal et al., 2011; Pearce & Conger, 2002). There is a need to intentionally train future leaders. One way of doing this is through the transformative leadership (Northouse, 2021), where leaders attempt to empower other volunteers, act as role models, support and listen to their volunteers, and work alongside them. Another study states that assigning low-risk projects to potential future leaders could be used as a form of informal leadership training (Froelich, McKee, & Rathge, 2011); it would also allow leaders to assess a volunteer's capability to lead in the future. In

terms of CBCGs an example of this could be ask a potential future leader to run a planting day, or conservation event. The role of the leader would be to explain how the task relates to the overall goals of the group, check in throughout the day, and help with any concerns that may arise. This form of leader development would also have minimal costs, so would be ideal for small CBCGs or those with limited funds. However, in some instances some sort of more formal leadership course or training would also be beneficial, although this would require additional funds or a form of fundraising to be able to provide certain individuals with specific training (Santora, Sarros, & Esposito, 2010). If volunteer groups have a leadership development plan in place they would know how much money is available for training and would be able to budget accordingly (Johnson, 2022).

Leadership training and the impact of succession is not often discussed prior to the loss of a leader, and was a low priority to many of the local CBCGS that I spoke to. However, with a few key individuals running these local groups there needs to be a plan in place for when they leave. Discussing leadership succession and having individuals in place to take over is crucial for the continued running of CBCGs and the success of their overall conservation goals. The involvement of multiple individuals who work together as leaders would also help to reduce the negative impact of leader succession. It would be wise for CBCGs and other volunteer groups to have some form of leadership training and a plan for leader succession.

7.3 What are the barriers to recruiting and retaining community-based conservation volunteers?

Time taken and health issues were the top barriers to volunteering for CBC in the Manawatū. Figure 7.1 illustrates that “time” was often the top word used to describe limitations to volunteering. Whereas, the word “health” was the top word used for giving up volunteering all together (as illustrated in Figure 7.2). These barriers impact volunteer recruitment and the continued participation of individuals, and should be taken into account in the planning stages of local conservation initiatives.

Figure 7.1 Word cloud of factors that limit volunteers' ability to participate (the larger, bolder words highlight the factors most frequently mentioned by questionnaire respondents).

Figure 7.2 Word cloud of factors that might lead volunteers to stop participating (the larger, bolder words highlight the factors most frequently mentioned by questionnaire respondents).

A general trend in CBCGs is that they frequently have a high proportion of individuals that are aged over 60, and are often retired (e.g. Bushway, Dickinson, Stedman, Wagenet, & Weinstein, 2011; Frensley et al., 2017; Heimann & Medvecky, 2022; Larson et al., 2020; Thomas, Cullen, O'Leary, Wilson, & Fitzsimons, 2021). The limited number of volunteers from younger age groups has been attributed to be due to time constraints associated with career and family commitments (Thomas et al., 2021). Among CBC volunteers within the Manawatū "time taken" was the top barrier with a mean of 2.87 out of a possible 5, and there was a substantial difference between older and younger volunteers. Volunteers tended to have a difference of importance placed on time taken between age groups. Forty-three percent of volunteers aged over 60 rated "time taken" as not important, compared to 18% of under 60 year olds. However, "time taken" can encompass a range of aspects including time constraints, the time volunteering takes, along with aspects that restrict individual attendance, such as family life, work and study commitments.

A series of studies on environmental volunteering have found that time is a key barrier to volunteer recruitment and participation. A study by Higgins & Shackleton (2015) examined the benefits and barriers that impacted volunteers at a range of environmental civic organisations in South Africa. They found that 61% of their volunteers perceived that "lack of time" was a barrier to participating, and it was the top perceived barrier across all organisations. A literature review by Bushway et al. (2011) had similar results stating that time and money were leading barriers to participation in environmental volunteering. Lack of time is also a common barrier to volunteering in general not just environmental and CBC volunteering. A range of studies show that young people state a lack of time as the key barrier to a range of volunteering opportunities (Mainar, Servós, & Gil, 2015; Smith, 1999; Southby, South, & Bagnall, 2019), especially if they are also working (Mainar et al., 2015). Lack of time is also mentioned as a barrier to older adults in some studies, but tends to be less significant than declining health and lack of awareness of environmental issues (Hvenegaard & Perkins, 2019; Pillemer et al., 2017; Tang, Morrow-Howell, & Choi, 2010). Lack of time, as a barrier, has also been linked to increased turnover

and absenteeism (Malinen & Mankkinen, 2018). Therefore, even though lack of time may be more strongly associated with younger volunteers that have additional work and family commitments it seems to be a significant barrier across a range of ages and types of volunteering, and should be taken into account in the planning stages of volunteering programmes.

In order to mitigate this barrier and improve the recruitment and retention of volunteers CBCG managers and leaders should be flexible around volunteering times, and provide a range of options for involvement at different times/days and differing lengths of time (Frensley et al., 2017; Hansen & Slagsvold, 2020). This may not be viable for smaller CBCGs, and it may be fruitful to coordinate with other CBCGs so there is a variety of CBC volunteering opportunities within a local community. Offering volunteers a variety of volunteering opportunities will allow volunteers who have limited time to still make a contribution, even a small one, helping to increase awareness and reduce turnover rates (Frensley et al., 2017; Higgins & Shackleton, 2015; Hong & Morrow-Howell, 2013), and hopefully attract more younger volunteers. Targeting specific age groups (e.g. young professionals, students, families, retired individuals etc) when recruiting volunteers, and setting up activities that they can relate to can help to increase the age range of volunteers.

In terms of recruiting young volunteers, the use of social media has been found to be a potentially positive tool to engage and recruit young volunteers, in particular for promoting volunteering, and recruiting short-term volunteers (Lee, 2020). There is also evidence that social and political engagement online is positively correlated with participation in similar activities off-line, such as volunteering and increased community engagement (DeAndrea, Ellison, LaRose, Steinfield, & Fiore, 2012; Ihm, 2017). However, there are also some pitfalls to using social media to engage and recruit younger volunteers. Social media has a limited reach, and is not accessible to everyone, (Hargittai, 2007). However, it has been found that moderate social media use increases community engagement (Lee, 2020). After looking at a series of social media sites from the CBCGs in the Manawatū, many of the local CBCG could benefit from increased promotion and engagement on social media. Many CBCGs

have no or minimal engagement with online platforms. These groups could benefit from using social media sites to promote their groups goals and raise awareness around local environmental issues, increasing knowledge around local conservation opportunities. ENM could develop a small online platform to help promote CBC and engage volunteers. Overall, the use of social media as part of recruitment campaign is likely to increase the number of younger volunteers engaged with CBC, and increase awareness around local conservation issues, whether it be online or on-the-ground volunteering. With the lack of time being the rated as one of the top barriers for volunteering, it is important that we offer a range of times and activities, including short volunteering opportunities and we increase engagement by promoting volunteering opportunities on social media, along with other forms of advertising such as newspapers, word of mouth and community newsletters.

Poor health and limited mobility are significant barriers to continued participation in volunteering, especially for older volunteers (Hvenegaard & Perkins, 2019; Li & Ferraro, 2006; Papa, Cutuli, Principi, & Scherer, 2019; Pope, 2005; Tang et al., 2010). Forty-seven percent of questionnaire respondents indicated that health issues limit their volunteering ability to some degree. In a study by Tang et al. (2010) examining the reasons for turnover in older adult volunteers in the United States, the main reason for volunteer withdrawal was a higher priority of another commitment, followed by declining health. 27.1% of volunteers stated health decline as a reason to stop volunteering. Research by Li and Ferraro (2006) found that that disease can negatively impact physical functioning which in turn would make volunteering difficult. Another study that investigates the relationship between health and volunteering in older adults using data from the Survey of Health, Ageing and Retirement in Europe found that worsening health conditions, such as depression and reduced mobility, reduce the likelihood of an individual volunteering (Papa et al., 2019).

However, it has also been found that increased volunteering in older individuals may actually improve physical functionality, particularly in individuals with chronic diseases (Papa et al. 2019). CBC volunteering has been demonstrated to promote a wide range of physical, social and mental health

benefits (Chen et al., 2020; Gagliardi, Pillemer, Gambella, Piccinini, & Fabbietti, 2020; Husk, Lovell, Cooper, Stahl-Timmins, & Garside, 2016; O'Brien, Townsend, & Ebden, 2010; Patrick, Henderson-Wilson, & Ebden, 2021; Zuo, Wheeler, & Edwards, 2016), via a combination of promoting physical activity; providing exposure to nature (e.g. Kaplan, 1995; Pretty, Peacock, Sellens, & Griffin, 2005; Townsend, 2006); and encouraging active hands-on experiences with nature (e.g. Mitchell & Popham, 2008; Patrick et al., 2021). A review paper by Chen et al. (2022) examines the current state of environmental volunteering for older adults. Their findings show that environmental volunteering is related to benefits in physical and mental health, social capital and personal empowerment. They also argue that environmental volunteering can help retired individuals to find a sense of purpose, provide opportunities for socialization and physical activity, and increase self-esteem. This reflects the findings of this study where many interviewees and questionnaire respondents mentioned wanting to do something purposeful, and worthwhile in their retirement.

A study by Li and Ferraro (2006) also found that participation in general volunteering can also lead to better mental health in older adults, and decreases the rate of functional decline. Volunteering has also been found to have mental health benefits which are often attributed to social integration ("the degree to which individuals participate in a wide range of social roles and relationships" (Crittenden & Cohen, 2014)), and a variety of social roles which is thought to give individuals purpose, increase social support, enhance resilience, reduce feelings of isolation and despair and lead to a stronger sense of identity (Li & Ferraro, 2006). Interestingly the importance placed on socialisation by questionnaire respondents was not as important as in other similar studies. However, even though socialisation was not a top motivation to volunteer, they likely still benefit from an array of health benefits via socialising with other like-minded individuals. Despite the benefits volunteering can have on mental health issues, such as depression, individuals with mental health issues are less likely to start volunteering (Li & Ferraro, 2006; Thoits & Hewitt, 2001). However, once individuals are fully engaged in volunteering their decisions around withdrawing from volunteering are typically not impacted by a decline in health

(McNamara & Gonzales, 2011; Papa et al., 2019). This was apparent in CBC in the Manawatū with several volunteers stating death, as the only reason they would stop volunteering.

To conclude, two key barriers that were identified by CBC volunteers in the Manawatū were time and health issues. To help address these barriers, CBCGs should try to provide volunteering opportunities which are flexible in the timing and length of activities, and the type of activities available, including options for individuals with health issues. Encouraging individuals to get involved in CBC volunteering could lead to an array of health benefits for volunteers.

7.4 What can be done to encourage more public participation in community-based conservation?

There is a need to have a more proactive approach to increase awareness of local environmental issues and CBC initiatives. The research findings identify a range of factors that will help to engage the general public's interest in local conservation and increase participation in CBC:

- Volunteer motivation factors are crucial to volunteer recruitment, retention and satisfaction, so motivation factors should be taken into account in the planning stages and throughout any CBC initiative or project, keeping in mind that motivations may change with time.
- It is important to offer a range of options including one-off or short-term volunteering opportunities, to convey that CBC can be quick and easy, while still having a positive impact on the local environment (Hoye et al. 2020). Such opportunities can allow individuals to experience CBC, with the hope that they will become more committed as time goes on.
- There is limited awareness within the general public about CBC and the breadth of opportunities for CBC volunteering. As such, there is a need to better promote CBC and the fact that it offers an array of activities to suit individuals with different motivations.
- Targeted messaging addressing the different motivations and needs of potential volunteers via a range of platforms (e.g. social media, newspapers, flyers, community notice boards, local

radio) has the potential to increase the recruitment for volunteers from different age groups and backgrounds.

- There are a range of potential strategies for increasing volunteer retention including offering opportunities for socialising and skill development, regularly acknowledging the contribution of volunteers, mentoring potential future leaders and clearly communicating the positive impacts that volunteers' efforts have had or will have on the local environment.
- CBCG managers should make an effort to actively address key barriers, particularly time constraints and health issues, and provide a clear outline of simple tasks to be completed by volunteers to help minimise individuals avoiding CBC due to a lack of confidence or low self-efficacy.

Support networks are important for CBCGs especially for those with limited numbers. These are often in the form of umbrella groups which are usually "a larger organisation that is an incorporated body and can provide resources and backing to smaller groups that work in similar areas and/or share similar goals" (Communitynet Aotearoa, 2022 p.1). Some advantages for CBCGs of being part of an umbrella group are that they can help obtain funding for a project and help with skill development and resources (Communitynet Aotearoa, 2022). They can also provide a centralised platform for listing and contacting CBCGs, advertise local projects and invite volunteers to join, facilitate collaboration (Communitynet Aotearoa, 2022; Jain, 2015), reach target audiences, link individuals with appropriate CBCGs and communicate with the general public about local projects and successes (Birnbaum, 2006; Environment Network Manawatū, 2023; Jain, 2015). A study by Hoye et al. (2020) found that 36% of respondents stated they would be likely to use a centralised platform and therefore the use of umbrella groups could attract more potential volunteers and make getting involved easier.

Within the Manawatū region, ENM is the key centralised hub for environmental volunteering groups. "Environment Network Manawatū (ENM) exists to connect and inspire communities for environmental action; providing sector leadership, building capacity and capability, and creating

community" (Environment Network Manawatū, 2023 p.1). They have a range of roles which include promoting environmental activities, connecting volunteers and CBCGs, supporting organisational sustainability, providing educational opportunities and help with funding and resourcing (Environment Network Manawatū, 2023).

Interviewees shared a range of differing perspectives on the issue of connecting CBCGs. ENM plays a crucial role of connecting and supporting CBCGs in the Manawatū. For the most part CBCGs felt well supported, well connected and were able to engage with overarching conservation initiatives. However, there were a few CBCGs that indicated that there is a lack of cohesion between CBCGs and that they all need to "get on the same page" and work together. The diverse and loosely structured nature of the CBC volunteering sector means that ENM often selects projects due to funding opportunities, volunteer skill sets, who is available to contribute, and opportunities that come up. EMN also have a selection of projects that are planned over years and for which funding is applied for. Therefore, opportunities for CBCGs to get involved should be fluid with a range of CBCGs involved in projects at any given time. There are a few CBCGs that are not associated with ENM. These CBCGs are typically smaller groups that are located on the outskirts of the Manawatū, often having issues with volunteer recruitment and retention. It would be ideal if these groups could be encouraged to be involved with ENM or another umbrella group. Overall, the ENM is a crucial resource for CBCGs in the Manawatū and they are able to support a wide range of environmental groups to provide positive environmental outcomes.

Funding was a challenge for many CBCGs within the Manawatū:

> It (volunteering) is super time consuming and when you don't have much time it's a big ask. The other big downfall is that there's no money. There's no money to do anything that's a significant change (CBCG volunteer).
>
> We would do almost anything for money (CBCG employee).
>
> We survive, like a lot of volunteering organisations survive, on the smell of an oily rag and the strategic application for grants (CBCG trustee).

Additional funding would allow CBCGs to have a greater impact on conservation issues locally and even contribute to national conservation initiatives. Within Aotearoa New Zealand 86.9% of environment NPOs (including CBCGs) are reported to have no paid staff, with only 8.9% employing 1-5 staff members, as illustrated in Table 7.1.

Table 7.1 New Zealand environmental[14] NPO's number of paid employees. Source: Stats NZ (2018).

Paid employees	Number of NPOs	Percentage
0	1,791	86.9
1–5	183	8.9
6–19	54	2.6
20–99	27	1.3
100+	3	0.1
Total	2,060	100.0

Co-ordinators of CBCGs, especially ones with a larger number of volunteers, should be a paid position, and local government should be providing funding for those jobs instead of relying so heavily on a few key volunteers to improve the local environment. Interviewees mentioned that funding for a co-ordinator was difficult, and they definitely did not have the funding to pay for one themselves:

> The pollution challenge got a grant and so we had a co-ordinator and that's a critical thing. I mean funding for a paid co-ordinator makes a big difference (CBCG volunteer).

> What I am concerned about is our budget really, although it sounds like you got a lot of money it gets swallowed up very quickly (CBCG leader).

[14] The environment group includes NPOs that promote pollution abatement and control, natural resource conservation, the protection and beautification of open spaces, institutions involved with animal protection and welfare, wildlife preservation, and veterinary services.

> I think the biggest challenge for most environmental groups is that it's easy to for us to get funding for plants or for traps, it's very hard to get co-ordinator time funded and a lot of our groups run on volunteer goodwill, when you get to a certain point, you can't expect volunteers to do that. It's got to be somebodies' job (CBCG co-ordinator).

The use of regional or national networks for funding, could help to streamline funding opportunities and distribute resources effectively. In order to make the most of volunteer time, resources that are essential for continued conservation efforts such as peanut butter for traps and tools to clear blackberry and other weeds, should be sourced and supplied by local government. The heavy reliance on volunteers to restore and maintain local greenspaces, should be highly appreciated and financially supported by government departments which seems to be lacking within the Manawatū and across Aotearoa New Zealand. Many questionnaire respondents expressed disappointment about the lack of support and understanding of government agencies:

> Just gutted about DOC lack of leadership and voice on these matters CBCG volunteer (CBC volunteer).

> All local, regional and national sections of government love having volunteers but they are so under-valued and there are very few funding streams to allow for growing availability, decrease of volunteers and increased need for formal coordination (to meet health and safety). Volunteer groups need to be actually helping the economy by employing co-ordinating staff, which would lead to far better and increased action on environmental issues and help local economies by providing employment (CBC volunteer).

> Councils often dismiss the importance of community groups and their aims and prefer to fund their own schemes (CBCG volunteer).

The government has an ambitious goal to rid Aotearoa New Zealand of predators by 2050, but seems to be lacking the financial input to achieve their goals without substantial input from local volunteers, iwi and the public in general. It is not clear how the government intends to fund Predator Free 2050 if it can't even effectively support existing CBCGs across Aotearoa New Zealand. In order to have positive conservation outcomes, government agencies need to take environmental issues more seriously and

there needs to be a substantial input of continual funds into the conservation space by both local and central government, and a higher level of support and acknowledgement of CBC volunteers.

A significant question is whether conservation initiatives that solely reliant on volunteers are able to be maintained long term. Within Aotearoa New Zealand the ongoing pressure of mammalian predators and weed species, means that leaving traps unset for too long or ignoring areas that are covered in weeds, such as blackberry, will mean that previous work it technically void as unwanted species will rapidly reinhabit previous controlled or cleared areas. CBCGs that have multiple sites have stated that it is hard to split volunteers over sites as they have limited volunteers and volunteers often want to see a job through and just work at one site. This sometimes means that the responsibility for maintaining previously restored sites falls on the CBCG leader and one or two devoted volunteers who offer to help. A CBCG leader made this point very clear when she stated that sites that have been "completed" have to be continually managed forever:

> From my perspective I cannot always be doing the working bees but the working bees have to continue forever. For example, we have very nearly gone round the entire reserve once, we still have a couple of quite big patches to complete but we are starting to re-visit areas that were already done and that's where the working bee has to continue because within a year some of the blackberry would have come back and the gorse would have come back and old man's beard will be everywhere and we will be back to square one (CBCG leader).

There has also been mistakes due to lack of communication between local council and CBCGs. For example, one interviewee described hundreds of newly planted seedlings being mowed by council workers. One way to help mitigate these issues would be to have paid co-ordinators, so that time and effort could be invested into planning and scheduling working bees more effectively, and clearly communicating with council.

It is ecologically valuable to have one large conservation site over a series of smaller separate areas, as a large core allows for continual self-generation and minimises edge effects. However, within urban

or sub-urban areas conservation sites are often small, fragmented areas of native bush. Small areas of native bush are susceptible to significant edge effects which are “an abrupt and artificial change at the boundary to a protected area, such as between pasture and natural ecosystems, and is the place of greatest stress on the natural system through climatic exposure, pressure from animal browse, and pest encroachment” (Department of Conservation, 2024). Therefore, many CBCG conservation sites need constant maintenance to protect crucial habitat for native species, and therefore a constant and increasing supply of volunteers.

The closeness of conservation sites to people’s personal gardens also means that there will be constant contamination of weeds and pest species, such as cats, into restored native bush remnants. Yet again, limited funding and support from government restricts volunteers ability to maintain these sites efficiently. As highlighted by CBCG volunteers in open ended questionnaire answers:

> It’s heart breaking when you are volunteering to have efforts wasted through government decisions, e.g. putting roads through native forest, not controlling cats (keep on own property and definitely out of reserves, our reserve lost so many native bird in very short time from one cat, disheartening after years of pest control and seeing numbers build up to lose them. Also decisions like encouraging growth of pines rather than natives (pines fire risk. Single species, poison land, native might be slower initially for carbon sinks but overall natives are better and also better for our wildlife) why do we give up our time and spend our own money (always a cost in volunteering) to have it wasted? (CBCG volunteer).

> For organizations (e.g. councils) to remember that people who live in the area know more about the environment that those that work in councils. And it would cost much less to work together than apart. As they fight any consent that doesn't include their views. At consent hearings it is too hard to be heard as you have to be an expert to be listened to. No one recognizes local knowledge (CBCG volunteer).

The inclusion of volunteers in decision-making has been found to increase participation and commitment of volunteers in local conservation projects (Forgie et al., 2001; New, 2010; Ruiz-Mallen et al., 2015). In order for government policies to be successful they require significant community support, and therefore government agencies should be working with local CBCGs, as equals, not

hindering their efforts. The findings of this study suggest that there is a definite need for local government to build trust with CBCGs, by improving communication, collaborating on decisions and having flexibility around local ideas and concepts, in order to have positive relationships, improve conservation outcomes and pinpoint new areas for conservation projects through local knowledge.

7.5 Conclusion

Successful conservation outcomes in Aotearoa New Zealand tend to be heavily reliant on volunteers. This research has added to the limited knowledge around what motivates New Zealand CBC volunteers to participate in CBC, both initially and in the long-term, and has returned some useful findings that may help CBCG leaders, government agencies and non-government organisations encourage and retain more committed volunteers, and mitigate barriers that often limit or exclude individuals from participating.

This study shows that CBC volunteers in the Manawatū are typically older, well-educated and either retired or in part-time employment, with slightly more female than male volunteers. On average respondents have been volunteering for between 1 and 5 years, with some individuals being involved for over 40 years, and with most individuals volunteering multiple times a week. A social interaction with another volunteer, and local advertisements are the most common forms of recruitment. All the respondents volunteered within their local area and respondents identified a variety of activities including rubbish removal, pest control, advocacy, education, planting, weeding, clearing of large trees and vines, cleaning, animal care, seed collection, improving water quality and native plant growing, ongoing maintenance, and sand dune restoration. Fifty-six percent of CBCGs are currently undertaking some form of CBEM, including pest trapping, bird counts, plant growth and survival rates, pest monitoring, rubbish collection, bird health and water quality sampling

The four motivations that were identified as most important initially and in the long-term were “to care for the environment”, “to help the local community”, “to connect with nature” and “to be

outside, or amongst nature", with the least important being "to advance my career". The most frequently mentioned factors that limited or stopped volunteers participating were time constraints, health issues, working and/or studying, family commitments and distance travelled. A high proportion of the volunteers placed importance on having a connection to the group they volunteered for, the place they volunteered and nature in general while volunteering. There was also a need for improved relationships and support from iwi, local and regional government and DOC.

These key findings led to several recommendations, which have been discussed in detail throughout the thesis, and would be beneficial to CBC in New Zealand and internationally:

- CBC needs to be promoted in a way that attracts a range of volunteers, including encouraging the recruitment of tertiary students and families alongside the continued participation of retired individuals. This requires a range of recruitment methods to attract, maintain and support a variety of volunteers.
- Volunteer motivations need to be taken into consideration in planning and implementing CBC activities, to improve volunteer satisfaction and engagement by fulfilling a variety of motivations. Potential barriers to volunteering should also be actively addressed in order to mitigate key issues that are likely to limit participation in CBC.
- Where possible, CBCGs should offer a variety of tasks for volunteers to participate in, which are flexible in terms of duration and commitment levels of volunteers, to allow individuals with health issues and time constraints to participate.
- Volunteer satisfaction is key to successful CBC. CBGG leaders should therefore integrate socialisation, volunteer appreciation and targeted ongoing education and training for volunteers into CBC. These measures contribute towards volunteers feeling valued, and builds confidence and skills which can lead to increased volunteer commitment and volunteers being more willing to step into leadership roles.

- Many CBCGs are heavily reliant on a few key volunteers. As such, it is important that CBCGs develop strategies to reduce volunteer burn-out and have a leadership succession plan including mentoring and training to foster more committed volunteers and the emergence of new leaders to ensure the long term viability of projects.
- If possible, CBCGs should implement some form of CBEM and collect data to allow them to gauge success and modify their efforts to improve outcomes. Undertaking CBEM has the additional benefit of improving CBCGs' chances of receiving funding as funding bodies often ask for evidence of success.
- Stakeholders provide crucial support to help ensure successful and effective CBC. As such, building strong, collaborative relationships between volunteers and other stakeholders is important. Positive relationships can also reduce conflict and volunteer dissatisfaction, which in turn can contribute to an increase in positive conservation outcomes.
- CBC volunteers play a critical role in achieving local and national conservation objectives. It is therefore important that CBC volunteers are empowered to actively participate in local conservation decision making processes, and to build trusting relationships and increase collaboration between CBCGs and local and national government.

On a broader scale, the findings and recommendations from this research could be used by government agencies and other stakeholders to better support CBC volunteers. Conservation in Aotearoa New Zealand is not without challenges, but having a substantial group of dedicated volunteers willing to help the cause is critical to the success of local and national conservation goals. Supporting CBC volunteers won't only benefit CBC volunteers but will contribute to the success of conservation in Aotearoa New Zealand now and into the future. Even though this research was carried out in the Manawatū region of New Zealand the recommendations would also be beneficial to CBC throughout New Zealand and overseas due to the relevance and similarities in findings of other studies on CBC and environmental volunteering.

7.5.1 Future research

There is considerable scope for more research to be undertaken in this area. A key issue that was revealed but not explored in this research was the tense relationships between some key stakeholders involved in CBC. Research into the dynamics between key stakeholders and how to build trusting, enduring relationships which would allow them to collaborate more effectively could help to identify ways to reduce conflict and tension between stakeholders and contribute to enhancing local conservation efforts. There is also a need for more research into funding mechanisms for CBC. A recurring theme within the interviews and questionnaire responses was how important it is to secure funding for conservation projects and programmes and how challenging this can be. Research exploring possible ways to streamline the allocation of funding and how to ensure that limited funds reach the groups that need them most would be extremely beneficial to maximising positive conservation outcomes.

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APPENDICES

Appendix 1: Summary of the online investigation

	Organisation	I	Q	Website/Facebook Page	Mission Statement	Local Activities
	Department of Conservation (DOC)	✓	✓	https://www.doc.govt.nz/ https://www.facebook.com/docgovtnz	DOC is the government agency charged with conserving New Zealand's natural and historic heritage. They work in partnership with iwi, community groups and businesses to achieve more conservation.	
	Environment Network Manawatū (ENM)	✓	✓	https://enm.org.nz/ https://www.facebook.com/EnvironmentManawatu	ENM is the environment hub for the Manawatū Region with the key purpose of facilitating and enabling communication, cooperation, and increasing collective action amongst its member groups and the wider community.	
1	**A Rocha (Palmerston North branch)**	✓	✓	https://www.naturespace.org.nz/groups/rocha-aotearoa-new-zealand	A Rocha's mission is to protect and restore the environment through CBC projects, research, and education. Specifically, by having well-resourced CBC projects of local, regional and national significance, high-quality educational experiences, and communities caring for creation and exploring ways for sustainable living.	The local Palmerston North branch organizes seed collection, tree planting and working bees within the surrounding area such as at Pohangina, Pitt Park and the Longburn Adventist College.
2	**Castlecliff Coast Care**		✓	https://www.naturespace.org.nz/groups/castlecliff-coast-care	Castlecliff Coast Care's mission is to have an enhanced community facility at Castlecliff beach. The purpose of the group is to stabilise and enhance the biodiversity of the dunes by planting native plants, developing community ownership of the project by participation and education, and to provide voluntary work opportunities for those trying to become employed.	Castlecliff Coast Care has a variety of activities dependant on the season. In the winter they do planting on the dunes, while in summer their top priority is mulching and watering. At other times they undertake education activities, weeding, and general maintenance of the re-planted areas. They have also recently set up a pest monitoring scheme.

3	**Ahimate Reserve Community**	✓	✓	https://www.facebook.com/ahimatereserve/	Ahimate Reserve Community's mission is to promote Ahimate reserve as a community asset.	Ahimate Reserve Community has many events on their Facebook page, and regularly organise working bees and other events to help with the upkeep and development of the reserve.
4	**Pit Park people**	✓	✓	https://www.naturespace.org.nz/groups/pit-park-people-society-inc	Pit Park People is a community of volunteers in partnership with PNCC, with the mission of creating and maintaining a recreation space in a disused clay quarry.	The pit is now a lush, restored habitat which attracts native birds into the urban environment. Progress on the park continues, with volunteers raising native grasses and shrubs from seed, planting plants, and regular maintenance and working bees (held on the third Sunday of each month from 1:30-3:30pm).
5	**Green Corridors**	✓	✓	https://www.pncc.govt.nz/council-city/what-were-doing/biodiversity/green-corridors/	Green Corridors' aim is to build corridors of native vegetation along the streams spanning from the Tararua Ranges to the Manawatū River. The Green Corridors programme enhances areas of native bush along streams, provides a place for wildlife to thrive, improves water quality, and creates open green spaces from the Tararua Ranges to the Manawatū River.	Green Corridors is a voluntary group that works with the council to plan and oversee the planting of reserve areas to encourage native biodiversity. The group has given considerable time and expertise to establishing a series of revegetation projects and continues to seek new locations for further green corridor planting in the city. The group aims to plant 10,000 plants a year. The planting season usually runs from May to September. Outside the planting season, the group plans future planting, raises seedlings and maintains existing areas.
6	**RECAP**		✓	https://recap.org.nz/ https://www.facebook.com/ResilienceAshhurstPohangina	Working to create social and ecological resilience at the local level to changes in climate, external resource supply and global finance. Workshops, courses, a community garden and orchard.	There is a range of volunteer roles available for anyone who is interested, from gardening to governance, from annual to weekly support. RECAP are also grateful for opportunities to work in partnership with other community groups. They also have weekly working bees.

7	**Keeble's Bush Trust**	✓	✓	https://enm.org.nz/directory/keebles-bush-trust	Keeble's Bush Trust's main objective is the maintenance of a 23 hectare protected bush reserve considered to be one of the finest remaining examples of podocarp broadleaf lowland forest in the Manawatū.	Restoration efforts include weed and pest control, and planting natives.
8	**Rangiwahai Environmental Arts Centre Trust (REACT)**	✓	✓	https://www.rangienviroartscentre.org/	An Environmental Arts Centre that promotes sustainability in creativity, with an emphasis on recycling and growing your own resources.	Events and local activities on webpage and Facebook are outdated.
9	**Manawatū Estuary Trust**	✓	✓	https://www.metrust.org.nz/	The Manawatū Estuary Trust is a conservation group dedicated to looking after the Manawatū River estuary. The trust's main focuses are education, protection and restoration of the estuary.	The trust is involved in a lot of environmental activities, focused mainly on education, protection and restoration of the estuary. (Comprehensive list on their website)
10	**Save our River Trust**	✓	✓	http://www.foxton.org.nz/sort.html https://www.facebook.com/FoxtonSaveOurRiverTrust	Save our River Trust is a community organisation that focuses on the restoration of the Manawatū River Foxton loop and beautifying the surrounding areas.	Current activities include removing the threat of predatory pests, establishing wetlands, clearing and killing willows and weeds, fencing off the cattle on Matakarapa Island and planting giant flax on the banks.
11	**Wildlife Foxton Trust**	✓	✓	https://www.facebook.com/p./wildlifefoxton/about/?ref=page_internal	Wildlife Foxton Trust's mission is education by example - delivering ecological and environmental education.	Wildlife Foxton Trust focuses on environmental education about New Zealand's Forgotten Fauna. They host tours for visitors, schools and other groups. They also lead other education programmes at the Manawatū Estuary.
12	**Wildbase Recovery Community Trust**	✓	✓	https://wildbaserecovery.co.nz/	Central Energy Trust Wildbase Recovery provides shelter and world-class care for native wildlife to rehabilitate after treatment at Massey University's Wildbase Hospital.	Wild base has a Powerco Education Centre which is an exciting learning environment, that caters for all levels from pre-school through to the early high school years. They are also open to the public, and take school, and other group tours.
13	**Pest-free Summerhill**	✓	✓	https://www.facebook.com/Pest-Free-Summerhill-102830907754620	Pest-free Summerhill aims to reduce pest numbers and thus enhance the biodiversity	This group of volunteers is working to install and maintain trap lines in green belts and walkways in the

					of the urban bush areas on Summerhill.	Fitzherbert area of Palmerston North.
14	**Water & Environmental Care Association Inc.**		✓	https://www.facebook.com/p./WECA.Inc/about/?ref=page_internal	To make good water quality a community priority.	No active events or working bees that I can see. Seems to be a Facebook page talking about government actions around fresh water.
15	**Water Protection Society**		✓	https://enm.org.nz/directory/water-protection-society	The Water Protection Society holds water polluters to account.	People and organisations who want to pollute waterways have to get permission from the Regional Council to do so. This requires a 'consent'. The Society has submitted on these consents and tried to get the applicants to stop discharging to streams and rivers. is also currently wanting to increase public awareness and engagement so more people can contribute to restoring waterways.
16	**Railway Land Action Group**			https://enm.org.nz/directory/railway-land-action-group	The Railway Land Action Group Inc. is dedicated to the preservation and enhancement of public green spaces in the City of Palmerston North.	The group has actively campaigns on retaining public green space.
17	**Palmerston North City Environmental Trust**		✓	https://pncet.org.nz/	The Palmerston North City Environmental Trust aims to contribute to Palmerston North becoming a more environmentally sustainable and vibrant city, by supporting and stimulating activities that encourage sustainably. It aims to generate awareness about sustainability, deliver principled and effective advocacy for the environment, and provide funding for local environmentally-focused projects.	Key ways in which it achieves these aims are through organising Reel Earth Environmental Film Festival, EnviroFest and distributing grants for community environmental endeavours.
18	**Te Ao Turoa**			https://enm.org.nz/directory/te-ao-turoa http://www.rangitaane.iwi.nz/	Te Ao Turoa Environmental Centre is part of the corporate arm of the Iwi Authority, providing an important cultural and educational service to natural resource	The Te Ao Turoa Enviro-Centre has a broad area over which it administers to management, mitigation, or otherwise minimise, the cultural impacts primarily for

					users, local Councils and central Government agencies.	resource consents for the Rangitāne o Manawatū iwi.
19	**Ruahine Whio Protectors**			https://www.rwp.org.nz/ https://enm.org.nz/directory/ruahine-whio-protection-trust	The Ruahine Whio Protection Trust aims to protect whio, the rare native blue duck, and their habitat, in the Ruahine Ranges, and to raise the funds necessary for this work.	The Ruahine Whio Protectors currently maintain over 2,500 stoat traps, and carry out fundraisers including the sale of calendars and t-shirts.
20	**Ngā Kaitiaki ō Rerengā Rauropi**			https://www.facebook.com/rerengarauropi.org https://enm.org.nz/directory/nga-kaitiaki-o-rerenga-rauropi	Ngā Kaitiaki ō Rerengā Rauropi is a community group aiming to enhance the environment particularly on the western side of Palmerston North city, to ensure best environmental practices and community relationships, and to think for the future for our tamariki.	Removing weeds and rubbish from public parks and streams, and undertaking native planting, environmental monitoring and pest control.
21	**Tutukiwi**	✓	✓	https://www.pncc.govt.nz/Parks-recreation/Parks-and-reserves/Tutukiwi-Reserve	A small community group that is responsible for the restoration of Tutukiwi Reserve.	No information about local activities on a website or Facebook page.

(**I**= CBCGs that had 1 or more representatives participate in an interview, **Q**= CBCGs that had 1 or more volunteers complete the questionnaire)

Four additional local CBCGs were identified through the questionnaire: the Foxton Beach Dune Garden Team, Coastal Wattle Busters, Owhango Alive, and Maketu Ongatoro Wetland Society.

Appendix 2: Semi-structured interview questions

Interview questions for CBCG volunteers

1. Tell me a little bit about the CBCG that you are part of?

2. What conservation work does your CBCG do?

    a. Why do you do that? (depends on answer above)

3. In terms of your conservation work do you know if your CBCG has any goals or things they are wanting to achieve?

    a. Could you tell me a little bit about these?

4. Why did you decide to volunteer at your CBCG?

    a. What are the key things that you enjoy about volunteering?
    b. Is there anything that is off putting about volunteering?

5. Do you personally track your progress or carry out any sort of monitoring for your CBCG?

6. Do you have working bees or events? How often are they?

    a. Approximately how many volunteers would attend a working bee or event?
    b. What is the typical structure of the volunteers?
    c. Do people typically volunteer regularly? Is there a core group of volunteers?
    d. Do you know of people who have left? Could you tell me briefly some of the reasons people leave?

7. Are there any key issues within your CBCG that need to be resolved to the benefit of the group?

8. I will be interviewing a range of CBCGs within the Manawatu. Is there anything that you would like to know about other CBCGs?

9. Is there anyone else you think I should speak to?

Interview questions for CBCG leaders and representatives

1. Tell me in your own words the purpose of your CBCG?

2. What conservation work does your CBCG do?

    a. Why do you do that? (depends on answer above)

3. In terms of your conservation work does your CBCG have goals or things that you are wanting to achieve?

    a. Could you tell me a little bit about these goals?

4. Why did you "personally" decide to volunteer at your CBCG?

    a. What are the key things that you enjoy about volunteering?
    b. Is there anything that is off putting about volunteering?

5. Does your CBCG or you personally track your progress or carry out any sort of monitoring?

6. How many volunteers does your CBCG have and what is the structure of your volunteers?

    a. Since you have been involved in your CBCG has there been any changes to the structure of volunteers?

7. Do you have working bees or events? How often are they?

    a. Approximately how many volunteers would attend a working bee or event?
    b. Do people typically volunteer regularly? Is there a core group of volunteers?

8. How does your CBCG recruit new volunteers?

    a. How big is the need for more volunteers?
    b. What are the typical reasons for people to start volunteering?
    c. How long do people typically volunteer for? Why do you think this might be?
    d. What are the typical reasons for people leaving?

9. How does your CBCG fund itself?

    a. Do you have any partnerships with local businesses, NGOs or government agencies?

10. Are there any aspects of your CBCG that need additional support? What would they be?

    a. Are there any key issues within your CBCG?

11. I will be interviewing a range of CBCGs within the Manawatu. Is there anything that your CBCG would like to know about other CBCGs?

12. Is there anyone else you think I should speak to?

Appendix 3: Questionnaire questions

1. How long have you been involved in ENVIRONNMENTAL volunteering (e.g. 1 year)?

……

2. Which environmental group/s do you currently volunteer for?

……

……

……

3. How did you come to join your environmental group/s?

……

……

……

……

4. On average how regularly do you participate in your environmental group/s?

- ☐ More than once a week
- ☐ Weekly
- ☐ Fortnightly
- ☐ Monthly
- ☐ A few times a year
- ☐ Other, please specify

……

……

5. Please rank EACH of the following from 1 (not important) to 5 (very important) in terms of which factors INITIALLY motivated you to volunteer.

	1 Not important	2	3	4	5 Very important
To care for the environment	○	○	○	○	○
To socialise with others	○	○	○	○	○
To get exercise	○	○	○	○	○
To be outside, or amongst nature	○	○	○	○	○
To learn new skills or knowledge	○	○	○	○	○
To advance in a career	○	○	○	○	○
To be involved in a well-run and managed project	○	○	○	○	○
For stress relief or escape	○	○	○	○	○
To educate others	○	○	○	○	○
For personal growth	○	○	○	○	○

As a connection to nature	○	○	○	○	○
To help the local community	○	○	○	○	○

Other, please specify

……

……

……

6. Please rank EACH of the following from 1 (not important) to 5 (Very important) in terms of which factors motivated you to CONTINUE to volunteer.

	1 Not important	2	3	4	5 Very important
To care for the environment	○	○	○	○	○
To socialise with others	○	○	○	○	○
To get exercise	○	○	○	○	○
To be outside, or amongst nature	○	○	○	○	○
To learn new skills or knowledge	○	○	○	○	○

To advance in a career	○	○	○	○	○
To be involved in a well-run and managed project	○	○	○	○	○
For stress relief or escape	○	○	○	○	○
To educate others	○	○	○	○	○
For personal growth	○	○	○	○	○
As a connection to nature	○	○	○	○	○
To help the local community	○	○	○	○	○
As an obligation to a group and/or participants	○	○	○	○	○

Other, please specify

……

……

…….

7. Have you ever brought another person with you to your environmental group/s?

- □ Yes
- □ No
- □ Unsure

If YES, how often did they attend?

- □ Once
- □ A few times
- □ Attend regularly
- □ Unsure

8. Are there any factors that make it difficult or which limit your ability to volunteer?

- ☐ Yes
- ☐ No
- ☐ Unsure

If YES, please specify

……

……

……

9. Please rank EACH of the following from 1 (not important) to 5 (very important) in terms of which factors LIMIT your ability to volunteer.

	1 Not important	2	3	4	5 Very important
Time taken	○	○	○	○	○
Location and/or travelling distance	○	○	○	○	○
Lack of activity options	○	○	○	○	○
Lack of activity relevance	○	○	○	○	○
Health issues	○	○	○	○	○

Other, please specify

……

……

……

10. Could you please note any factors that might lead you to stop volunteering?

……

……

……

11. Do you know of anyone who has stopped volunteering?

- Yes
- No
- Unsure

If YES, could you please note any reasons you are aware of?

……

……

12. What type of activities does your environmental group/s carry out?

……

……

……

13. Are there any activities that would encourage you to volunteer more often?

- Yes
- No
- Unsure

If YES, what are they?

……

……

……

14. Does your environmental group/s assign you specific activities?

- ☐ Yes
- ☐ No
- ☐ Sometimes
- ☐ Unsure

15. Would you find volunteering for your environmental group/s more enjoyable if you were able to have more of a say in the activities you helped with?

- ☐ Yes
- ☐ No
- ☐ Unsure

16. Are there any activities that you do not enjoy?

- ☐ Yes
- ☐ No
- ☐ Unsure

If YES, which activities do you find unenjoyable?

……

17. In general, on a scale of 1 (not enjoyable) to 5 (very enjoyable) how much do you enjoy volunteering for your environmental group/s?

1	2	3	4	5
not enjoyable				very enjoyable
○	○	○	○	○

18. Do you prefer to work alone or in a group when volunteering for your environmental group/s?

- Alone
- In a group
- Either
- Unsure

19. As far as you know does your environmental group/s carry out any sort of monitoring? (e.g. Bird counts, water quality tests, plant survival rates)

- Yes
- No (Please go to Q26)
- Unsure

If YES, what type of monitoring?

……

……

20. Are you personally involved in any monitoring?

- Yes
- No
- Unsure

If YES, what monitoring are you involved with?

……

21. On a scale of 1 (unenjoyable) to 5 (very enjoyable) how enjoyable do you find monitoring?

1	2	3	4	5
not enjoyable				very enjoyable
○	○	○	○	○

22. As far as you know does your environmental group/s have any partnerships?

- Yes
- No
- Unsure

If YES, which groups are your environmental group/s in partnership with?

- Iwi
- Local council
- DOC
- Local businesses
- Schools
- Forest and Bird
- Regional council
- Unsure
- Other, please specify

……

……

23. As far as you know, does your environmental group/s liaise or collaborate with local iwi or hapu?

- Yes
- No
- Unsure
-

24. Is there anything that would lead to more collaboration between iwi or hapu and your community group/s?

- Yes
- No
- Unsure

If YES, what would help collaboration?

……

……

25. As far as you know, does your environmental group/s liaise or collaborate with local or regional government?

- Yes
- No
- Unsure

26. How important on a scale of 1 (not important) to 5 (very important) do you think it is that your environmental group/s liaises or collaborates with local or regional government?

1	2	3	4	5
Not important				Very important
○	○	○	○	○

27. Is there anything that could be done to encourage collaboration with local or regional government?

- Yes
- No
- Unsure

If YES, what could help collaboration

……

……

28. As far as you know, does your environmental group/s liaise or collaborate with the Department of Conservation and/or the Ministry for the Environment?

- Yes
- No
- Unsure

29. How important on a scale of 1 (not important) to 5 (very important) do you think it is that your environmental group/s liaises or collaborates with the Department of Conservation and/or the Ministry for the Environment?

1	2	3	4	5
Not important				Very important
○	○	○	○	○

30. Is there anything that could be done to encourage collaboration with the Department of Conservation and/or the Ministry of the Environment?

- ☐ Yes
- ☐ No
- ☐ Unsure

If YES, what could help collaboration?

……

……

31. On a scale of 1 (not connected) to 5 (very connected) how connected do you feel to the PLACE where you volunteer?

1	2	3	4	5
Not connected				Very connected
○	○	○	○	○

32. On a scale of 1 (not connected) to 5 (very connected) how connected do you feel to NATURE in general while volunteering?

1	2	3	4	5
Not connected				Very connected
○	○	○	○	○

33. On a scale of 1 (not connected) to 5 (very connected) how connected do you feel to the GROUP you volunteer for?

1	2	3	4	5
Not connected				Very connected
○	○	○	○	○

34. On a scale of 1 (not committed) to 5 (very committed) how COMMITTED are you to your environmental group/s?

1	2	3	4	5
Not committed				Very committed
○	○	○	○	○

35. In general, would you say that the protection of the environment is an urgent problem that needs to be addressed immediately, more a problem for the future, or not really a problem?

Please tick ONE box.

- ☐ Urgent and immediate problem
- ☐ A future problem
- ☐ Not really a problem
- ☐ Unsure

36. Which, if any, of these things have you done in the last 12 months, out of concern for the environment?

	1 Have done	2 Have not done	3 Don't know
Chosen household products that you think are better for the environment.	◯	◯	◯
Decided for environmental reasons to reuse or recycle something rather than throw it away.	◯	◯	◯
Tried to reduce water consumption for environmental reasons.	◯	◯	◯
Attended a meeting or signed a letter or petition aimed at protecting the environment.	◯	◯	◯

37. Below are some statements about the environment. Please rank EACH statement from 1 (strongly disagree) to 5 (strongly agree).

	1 Strongly disagree	2	3	4	5 Strongly agree
I would agree to an increase in taxes if the extra money were used to prevent environmental damage.	○	○	○	○	○
I would buy things at up to 20% higher than usual prices if it would help protect the environment.	○	○	○	○	○
The government should reduce environmental pollution, but it shouldn't cost me any money.	○	○	○	○	○
New Zealand's clean, green image is a myth.	○	○	○	○	○
New Zealand is cleaner than other countries only because of our small population.	○	○	○	○	○
Protecting the environment should be given priority, even if it causes slower economic growth and some loss of jobs.	○	○	○	○	○

48. On a scale of 1 (no change) to 5 (big change/s) how much has your BEHAVIOUR/VIEWS towards the environment changed since you began volunteering?

1	2	3	4	5
No Change				Big change/s
○	○	○	○	○

39. Which of these categories best describes your employment status?

- Full time paid employment (30+ hours per week)
- Part time paid employment (15-29 hours per week)
- Paid employment for less than 15 hours per week
- Unemployed or beneficiary
- Student
- Retired
- Home duties

40. Which age bracket do you belong to?

- Less than 20
- 20-29
- 30-39
- 40-49
- 50-59
- 60-64
- 65-69
- 70-79
- 80+

41. Which of these categories best describes the highest level of formal education you have had?

- ☐ No formal schooling
- ☐ Primary school/Kura kaupapa
- ☐ Secondary school for up to 3 years
- ☐ Secondary school for 4 years or more
- ☐ Some university, wananga, polytechnic or other tertiary education
- ☐ Completed an undergraduate qualification
- ☐ Completed a postgraduate qualification
- ☐ Completed a PhD
- ☐ Not applicable/don't know

42. Are you

- ☐ Female
- ☐ Male
- ☐ Non-binary
- ☐ Prefer to self-describe

……

43. If you have any experiences or comments about ENVIRONMENTAL VOLUNTEERING or your ENVIRONMENTAL GROUP that you wish to share please comment below.

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Appendix 4: Information sheet for semi-structured interviews

MASSEY UNIVERSITY
SCHOOL OF AGRICULTURE AND ENVIRONMENT
ENVIRONMENTAL SCIENCES
TE WĀHANGA PŪTAIAO

I would like to invite you to participate in a study exploring the diverse perspectives on community conservation in the Manawatū, as part of my PhD in Environmental Management. I am interested in learning about community-based conservation groups in the Manawatū and what motivates people to participate in community conservation. A critical part of my study is to carry out interviews with key people so I can have a better overall view and understanding. The results of this research will be useful to help encourage more people to participate in community conservation, help local groups recruit more volunteers and allow the local communities to benefit from the positive outcomes of community-conservation.

If you would like to be part of this research I will arrange an interview at a time that is convenient for you. The interview will take between 45 minutes to an hour. With your permission, I would like to record the interview to ensure that I accurately capture your viewpoints. All recordings will be transcribed then deleted. All responses will remain anonymous unless you would prefer to have your responses linked to your name, community-based conservation group or job title.

Participation in this research is completely voluntary. At all times you have the right:

- To ask any questions about the research
- To decide that you do not want to take part in this study
- To decide not to answer any of the questions asked
- To withdraw from the study
- To decline to be recorded or to ask for the recorder to be switched off during the interview

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research. If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Prof Craig Johnson, Director, Research Ethics, telephone 06 356 9099 x 85271, email humanethics@massey.ac.nz.

If you would like to be part of this research or have any questions, please do not hesitate to contact Charlotte Sextus via the email below.

Our sincere thanks for your help, without which this research would not be possible.

Yours sincerely,

Charlotte Sextus
School of Agriculture and Environment
Email: charlotte.przybylski@gmail.com

Dr Karen Hytten
School of Agriculture and Environment
Email: K.Hytten@massey.ac.nz

Appendix 5: Semi-structured interview consent form

MASSEY UNIVERSITY

SCHOOL OF AGRICULTURE AND ENVIRONMENT

ENVIRONMENTAL SCIENCES

TE WĀHANGA PŪTAIAO

I have read, or have had read to me in my first language, and I understand the Information Sheet. I have had the details of the study explained to me, any questions I had have been answered to my satisfaction, and I understand that I may ask further questions at any time. I have been given sufficient time to consider whether to participate in this study and I understand participation is voluntary and that I may withdraw from the study at any time.

1. I agree to participate in this study under the conditions set out in the Information Sheet.
2. I agree/do not agree to the interview being sound recorded.
3. I wish to be identified by:

- ☐ Community-based conservation group
- ☐ Job title
- ☐ Name
- ☐ Anonymous

Declaration by Participant:

I _____ hereby consent to take part in this study.
[print full name]

Signature: _____ Date: _____

Appendix 6: Key characteristics of questionnaire respondents

Demographic characteristics		Percentage	Number
Employment Status	Full time paid employment	18.6%	13
	Part time paid employment	11.4%	8
	Paid employment for less than 15 hours per week	10.0%	7
	Unemployed or beneficiary	2.9%	2
	Student	8.6%	6
	Retired	41.1%	33
	Home duties	1.4%	1
Total			70
Age range	Less than 20	2.9%	2
	20-29	11.4%	8
	30-39	7.1%	5
	40-49	8.6%	6
	50-59	15.7%	11
	60-69	24.3%	17
	70-79	27.1%	19
	80 or older	2.9%	2
Total			70
Highest level of education	No formal schooling	0.0%	0
	Primary school/Kura kaupapa	0.0%	0
	Secondary school for up to 3 years	4.3%	3
	Secondary school for 4 years or more	10.0%	7
	Some university or other tertiary education	25.7%	18
	Completed an undergraduate qualification	20.0%	14
	Completed a postgraduate qualification	22.9%	16
	Completed a PhD	15.7%	11
	Not applicable/do not know	1.4%	1
			70
Gender	Female	52.9%	37
	Male	45.7%	32
	Non-binary	1.4%	1
Total			70

Appendix 7: The papers included in the systematic review

Identification number	Paper
1	Heimann, A., and F. Medvecky. 2022. Attitudes and motivations of New Zealand conservation volunteers. *New Zealand Journal of Ecology, 46*(1), 1-13. doi: 110.20417/nzjecol.46.18.
2	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.* doi: 10.1016/j.marpol.2020.104375.
3	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 and Restoration, 22*(1), 100-105. doi: 10.1111/emr.12442.
4	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.
5	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), 305-311. doi: 10.1080/03632415.2014.924407.
6	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), 904-923. doi: 10.1080/09640568.2017.1329139.
7	Domroese, M.C., and E.A. Johnson. 2017. Why watch bees? Motivations of citizen science volunteers in the Great Pollinator Project. *Biological Conservation, 208*, 40-47. doi: 10.1016/j.biocon.2016.08.020.
8	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 and Natural Resources, 28*(9), 1013-1029. doi: 10.1080/08941920.2015.1054976.
9	Asah, S.T., M.M. Lenentine, D.J. Blahna. 2014. Benefits of urban landscape eco-volunteerism: Mixed methods segmentation analysis and implications for volunteer retention. *Landscape and Urban Planning, 123*, 108-113. doi: 10.1016/j.landurbplan.2013.12.011.
10	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). doi: 10.34068/joe.51.03.25.
11	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, 27*(4), 866-875. doi: 10.1111/cobi.12058

12	Tulloch, A.I.T., K. Mustin, H.P. Possingham, J.K. Szabo, and K.A. Wilson, 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), 465-480. doi: 10.1111/j.1472-4642.2012.00947.x.
13	Asah, S.T., and D.J. Blahna. 2012. Motivational functionalism and urban conservation stewardship: Implications for volunteer involvement. *Conservation Letters, 5*(6), 470-477. doi: 10.1111/j.1755-263X.2012.00263.x.
14	Guiney, M.S., and K.S. Oberhauser. 2009. Conservation volunteers' connection to nature. *Ecopsychology, 1*(4), 187-197. doi: 10.1089/eco.2009.0030.
15	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), 377-399. doi: 10.1080/10705420903299961.
16	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 and Communication, 8*(1), 6-17. doi: 10.1080/15330150902847328.
17	Bruyere, B., and S. Rappe. 2007. Identifying the motivations of environmental volunteers. *Journal of Environmental Planning and Management, 50*(4), 503-516. doi: 10.1080/09640560701402034.
18	Schild, R. 2018. Fostering environmental citizenship: the motivations and outcomes of civic recreation. *Journal of Environmental Planning and Management, 61*(5-6), 924-949. doi: 10.1080/09640568.2017.1350144
19	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 and Urban Forestry, 44*(2), 59-72.
20	Alender, B. 2016. Understanding volunteer motivations to participate in citizen science projects: A deeper look at water quality monitoring. *Journal of Science Communication, 15*(3). doi: 10.22323/2.15030204.
21	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), 629-648. doi: 10.1080/09640560120079948.
22	Measham, T.G., and G.B. Barnett. 2008. Environmental volunteering: Motivations, modes and outcomes. *Australian Geographer, 39*(4), 537-552. doi: 10.1080/00049180802419237.
23	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.

24	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), 2821-2837. doi: 10.1007/s10531-017-1391-z.
25	Liarakou, G., E. Kostelou, and C. Gavrilakis. 2011. Environmental volunteers: Factors influencing their involvement in environmental action. *Environmental Education Research, 17*(5), 651-673. doi: 10.1080/13504622.2011.572159.
26	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
27	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. 28,* 37995-38006. doi: 10.1007/s11356-021-13379-7
28	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*, 158-168. doi: 10.1016/j.jort.2019.01.002.
29	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. *Gerontologist, 57*(2), 367-375. doi: 10.1093/geront/gnv693.
30	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), 837-854. doi: 10.1080/09640568.2014.899204.
31	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, 21*(4), 525-545. doi: 10.1007/s11266-010-9149-1
32	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.
33	Madsen, S.F., F. Ekelund, N. Strange, and J. Sølver Schou. 2021. Motivations of volunteers in Danish grazing organizations. *Sustainability (Switzerland), 13*(15). doi: 10.3390/su13158163.
34	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), 2031-2046. doi: 10.1007/s10531-015-0924-6.
35	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.

36	Woosnam, K.M., M. Strzelecka, G.S. Nisbett, and S.J. Seith. 2019. Examining millennials' global citizenship attitudes and behavioral intentions to engage in environmental volunteering. *Sustainability, 11*(8), 2324. doi: 10.3390/su11082324.
37	Bramston, P., G. Pretty, and C. Zammit. 2011. Assessing environmental stewardship motivation. *Environment and Behavior, 43*(6), 776-788. doi: 10.1177/0013916510382875.
38	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.
39	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), 1-14. doi: 10.5334/cstp.84.
40	Hvenegaard, G.T., and R. Perkins. 2019. Motivations, commitment, and turnover of bluebird trail managers. *Human Dimensions of Wildlife, 24*(3), 250-266. doi: 10.1080/10871209.2019.1598521.
41	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.
42	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), 514-530. doi: 10.1111/1748-8583.12040.
43	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.
44	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.

Appendix 8: The published version of Chapter 3

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A Systematic Review of Environmental Volunteer Motivations

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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.

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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

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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,

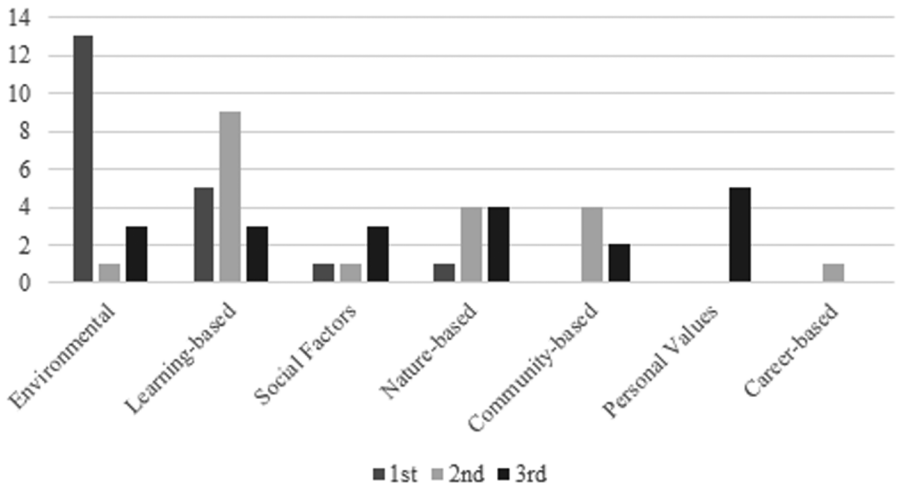

Figure 1. Graph showing the range of environmental volunteer motivations ranked first, second and third over 20 papers.

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.

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Appendix 9: The published version of Chapter 5

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Volunteer commitment and longevity in community-based conservation in Aotearoa New Zealand

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ABSTRACT

Committed volunteers are the driving force of successful community-based conservation initiatives. However, many groups struggle with recruitment and retention of volunteers. This research adds to the limited knowledge on what motivates community-based conservation volunteers to become committed to a conservation initiative, by carrying out a case study on community-based conservation volunteers in the Manawatū region of New Zealand. Twenty-one semi-structured interviews with key members of community-conservation groups were carried out along with a survey distributed to all local community-based conservation groups. This research showed that the key long-term motivation factors are 'to care for the environment', 'to help the local community', 'to be outside, or amongst nature' and to have 'a connection to nature'. There was minimal change between long-term and initial motivation factors, with only three motivation factors increasing in importance; 'to socialise with others', 'for stress relief or escape' and 'to help the local community', and one decreasing in importance; 'to learn new skills and knowledge'. In order to enhance commitment of volunteers there is a need to take motivation factors into account within project design and management, allow time for socialisation, and provide ongoing training, education and recognition.

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Introduction

Community-based conservation (CBC) involves the participation of the community in a range of natural resource management practices that aim to have a positive impact on the environment (Berkes 2004; Ruiz-Mallen et al. 2015). CBC 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 et al. 2009; Ruiz-Mallén et al. 2014; Ruiz-Mallen et al. 2015). To achieve successful CBC it is essential to have satisfied, committed volunteers; therefore, it is important to

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understand volunteer motivations, how they evolve and change over time and how to promote volunteer commitment.

People are motivated to volunteer for CBC for a variety of reasons. Understanding what motivates individuals to volunteer can help support community-based conservation groups (CBCGs), NGOs and government agencies in their efforts to maintain volunteer numbers and achieve conservation goals. Early research into volunteer motivations by Clary et al. (1998) identified six key motivation factors that influence people's decision to volunteer: 'values', the opportunity for individuals to express their 'altruistic and humanitarian concerns for others'; 'understanding', the opportunity to learn new things, use knowledge, or practice skills; 'social', the opportunity to connect with others; 'career', the possibility for career-related benefits; 'protective', in order to reduce guilt over being more fortunate than others; and 'enhancement' the chance for personal growth and development. Research by Ryan et al. (2001) and Bruyere and Rappe (2007) identified that in addition to these motivations, environmental volunteers are specifically motivated by 'a desire to help the environment'. Another important factor which motivates some environmental volunteers is 'a connection to nature'. Previous studies have shown that individuals with past experiences in nature or an attachment to a green space are not only more likely to volunteer but are more likely to become committed volunteers (Gooch 2003; Laverie and McDonald 2007; Pagès et al. 2018; Schild 2018). New Zealand research, including the Survey of New Zealanders (Ipsos 2016) and The Public Perceptions of New Zealand's Environment Survey (Hughey et al. 2016) also suggests that the key factors motivating environmental volunteers in New Zealand are 'to protect and enhance the environment' and 'to look after my local area'.

This research addresses four key questions: (1) What motivates CBC volunteers to be committed to a group or project? (2) Do CBC volunteer motivations change over time? (3) Does a personal connection to nature or an attachment to a place enhance commitment? and (4) What can be done to maintain and promote commitment in CBC volunteering? These questions are explored through a case study on CBC volunteers in the Manawatū region of New Zealand. Twenty-one semi-structured interviews with key members of CBCGs were carried out and a questionnaire distributed to all the CBCGs in the Manawatū to gain insight into the experiences and perspectives of both group leaders and participants. This research contributes to the limited literature on the value and importance of committed long term volunteers for the success of conservation goals. In particular, this research seeks to fill a gap in the literature by interviewing and surveying local volunteers in the Manawatū region of New Zealand, a region with a significant need for conservation initiatives and the restoration of natural habitats.

The importance of volunteers in community-based conservation

The number of volunteers participating in CBC is increasing worldwide (Ryan et al. 2001; Dudley et al. 2009; Bramston et al. 2011; Shirk et al. 2012; Ruiz-Mallén et al. 2014; Ruiz-Mallen et al. 2015; Frensley et al. 2017; Larson et al. 2020). Committed CBC volunteers are essential for many environmental organisations, and pivotal to addressing a number of ecological issues (Bramston et al. 2011; Hvenegaard and Perkins 2019). The success of environmental initiatives to protect and restore natural environments is becoming

increasingly dependent on CBC volunteers, and many would not exist without them (Bramston et al. 2011; Hvenegaard and Perkins 2019).

For example, a major current environmental initiative in New Zealand is Predator Free 2050. It is based on an ambitious goal set by the New Zealand government in 2016 to make New Zealand free from introduced predators by 2050, in order to protect native wildlife. The success and momentum of CBCGs in island eradications and mainland predator control inspired Predator Free 2050 and achieving this goal will require unprecedented collaboration between iwi, landowners, government, NGOs and local community groups. Volunteers are of upmost importance if this goal is to become a reality, and therefore the ability to attract and retain committed volunteers is key to its success (Department of Conservation 2020, 2021), and to achieving future conservation goals. However, 'the conservation sector has been grossly under resourced for decades by successive government and regional agencies' (Bowen 2024), and there has been a decrease in environmental volunteers from 2013 - 2018 (Stats 2018).

In this context, some question whether it is appropriate for the Predator Free 2050 programme to be so heavily reliant on volunteers. Some argue that the programme is extremely expensive and unlikely to be successful because it does not adequately take into account other key drivers of biodiversity loss and species extinction such as habitat fragmentation and habitat loss . While others highlight that its success is completely dependent on the active participation of the public, which will be a challenge especially for people with limited time and opportunity to participate in conservation initiatives (SMC 2020).

The Department of Conservation (DOC) is aware of this challenge and the importance of public and Māori input and leadership (Department of Conservation 2020). DOC acknowledges the importance of community involvement, and that the success of Predator Free 2050 is dependent on contributions from a diverse range of New Zealanders, and a strong social movement. DOC has set up a trust with the intention of connecting all the people involved and engaging people in their vision of a Predator Free New Zealand. DOC is also supporting CBCGs to carry out predator control in ways that work for them, inspiring volunteers to build on the social movement, and encouraging Māori and local communities to take leadership roles (Department of Conservation 2020, 2021). The Public Perceptions of New Zealand Environment Survey in 2019 reported an increase in predator control in people's backyards, volunteer work involving predator control and support for increased predator control (Hughey et al. 2019). This suggests that Predator Free 2050 is having some success on engaging the wider public in predator control. While there is a range of opinions on the success of Predator Free 2050, it widely agreed that getting the public onboard and actively participating is key to its success.

Understanding volunteer motivations is critical for effective volunteer recruitment, retention, and commitment (Geoghegan et al. 2016; Larson et al. 2020). Environmental organisations often have issues with high volunteer turnover and unreliability, leading to a waste of limited resources in recruiting and training new volunteers (Bushway et al. 2011; Asah and Blahna 2013; Higgins and Shackleton 2015; Ding and Schuett 2020; Larson et al. 2020). Previous studies have found that CBC and environmental volunteers have a range of different motivations which have been shown to be derived from a person's values, the desire for increased understanding and knowledge, social connections, career advancement, self-esteem and personal development (Ryan et al. 2001;

Asah and Blahna 2013; Newton et al. 2014; Frensley et al. 2017; Hvenegaard and Perkins 2019; Larson et al. 2020). 'Helping the environment' is often found to be the top motivation factor in environmental volunteering (Ryan et al. 2001; Bruyere and Rappe 2007; Akin et al. 2013; Alender 2016; Pagès et al. 2018; Gratzer and Brodschneider 2021; Thomas et al. 2021; Heimann and Medvecky 2022). The literature outlines a series of reasons for this motivation factor including a concern for the environment, a desire to help address specific environmental issues and wanting to restore or improve a local greenspace (Bruyere and Rappe 2007; Akin et al. 2013; Alender 2016; Dunkley 2019; Thomas et al. 2021). 'Helping the local community' is another key motivation factor that is driven by two aspects; people that want to protect and enhance local areas that they use and to help others in the local community by enhancing a local area (Bruyere and Rappe 2007; Ohmer et al. 2009; Asah and Blahna 2013; Alender 2016; Turnbull et al. 2020). Having a connection to nature can also motivate people to volunteer for environmental causes and has been found to contribute to a volunteer's desire to help the environment, leading to increased participation and longevity in environmental volunteering (Guiney and Oberhauser 2009; Pagès et al. 2018; Hvenegaard and Perkins 2019; Ganzevoort and van den Born 2020). When volunteers' motivations match the benefits they receive from volunteering they are more likely to be satisfied and participate long-term. Offering volunteers the opportunity to participate in a variety of tasks that match with common motivations, along with substantial acknowledgement of volunteer contributions is thought to increase volunteer retention and commitment (Clary et al. 1998; Ryan et al. 2001; Bonney et al. 2009; O'Brien et al. 2010; Newton et al. 2014; Frensley et al. 2017).

Motivations of environmental and CBC volunteers vary between participants and often evolve and change over time (Ryan et al. 2001; Bonney et al. 2009; Frensley et al. 2017; Larson et al. 2020). 'Helping the environment' and 'social factors' are often identified as key initial motivations (Pagès et al. 2018; Schild 2018).Whereas, 'personal experiences', and 'being part of a community', along with being part of a 'well organised project' are identified as key motivations for long-term committed volunteers (Asah and Blahna 2013; Frensley et al. 2017; Pagès et al. 2018; Schild 2018). A change in motivations over time can often relate to a change from a passive role to a more active role or leadership position (Bramston et al. 2011; Frensley et al. 2017). Therefore, it is important to provide participants with a variety of tasks which take level of commitment into account and provide participants opportunities to try new things, develop skills and become more involved in project management (Bonney et al. 2009; Asah and Blahna 2013; Geoghegan et al. 2016; Frensley et al. 2017; Larson et al. 2020).

Research suggests that volunteer satisfaction and commitment are associated with the ability of an organisation or project leader to be able to fulfil their volunteers' motivations, and provide relevant tasks that increase volunteer engagement (Ryan et al. 2001; Domroese and Johnson 2017; Frensley et al. 2017; Takase et al. 2019; Ding and Schuett 2020; Larson et al. 2020). Past studies have highlighted a range of other factors that may have a positive impact on volunteer satisfaction, consequently improving volunteer commitment. Some of the key factors mentioned are effective project management (Hvenegaard and Perkins 2019; Ding and Schuett 2020; Gulliver et al. 2022), ongoing education and training (Frensley et al. 2017; Hvenegaard and Perkins 2019; Gulliver et al. 2022), opportunities for social activities (Laverie and McDonald 2007; Pagès

et al. 2018; Schild 2018; Hvenegaard and Perkins 2019; Ding and Schuett 2020), providing volunteers with positive feedback (Hvenegaard and Perkins 2019; Gulliver et al. 2022), showing volunteers how their work has helped the environment (Ryan et al. 2001), and an attachment to an organisation or place (Laverie and McDonald 2007; Pagès et al. 2018; Schild 2018).

Methods

This paper examines the longevity and commitment of CBC volunteers in the Manawatū region of New Zealand. A mixed-methods approach was used including a desktop study of local CBCGs, semi-structured interviews with key CBCG representatives and a structured online questionnaire of CBC volunteers.

The Manawatū region is situated in the lower half of the North Island of New Zealand (as illustrated in Figure 1), with the main population centre of Palmerston North. The region encompasses the Manawatū river catchment, and includes a series of mountain ranges notably the Tararua and Ruahine ranges, along with the tree studded Manawatū plains that run between the ranges and the sea. The region is known for its strong agricultural sector and contains areas of ecological significance, including the internationally recognised RAMSAR estuary site at Foxton Beach (National Wetland Trust of New Zealand 2023).

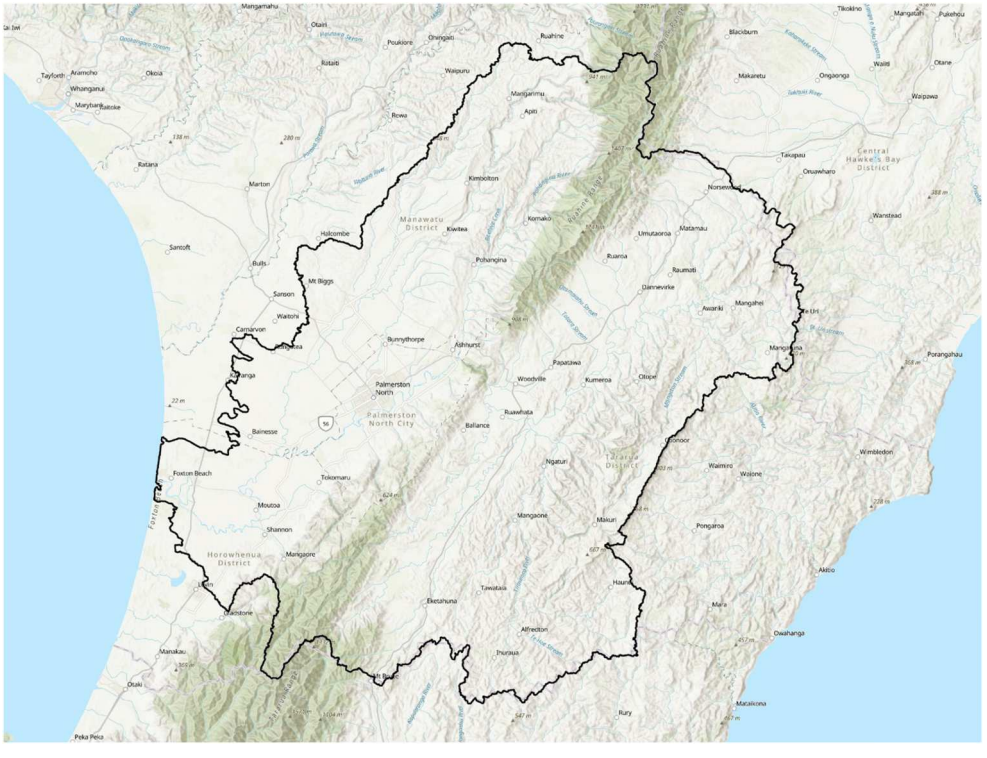

Figure 1. The Manawatū region, Aotearoa New Zealand.

Desktop study

A preliminary online investigation was carried out to identify all current CBCGs in the Manawatū region. The Environment Network Manawatū (ENM)[1], Forest and Bird[2] and the Department of Conservation websites were used to find all local CBCGs. Each of these websites had lists of CBCGs which were individually investigated to find all the CBCGs that were based in the Manawatū and have conservation based objectives. Twenty-one CBCGs were identified and Appendix 1 provides a brief summary of each CBCG. These CBCGs carry out a range of tasks including weeding, predator control, native plantings, growing native plants, habitat restoration, education, advocacy, and litter collection.

Semi-structured interviews

Semi-structured interviews were used to gain a thorough understanding of the local CBCGs and their volunteers. Initial interviews were also used to get a sense of key issues in order to develop the questionnaire. Each of the CBCGs found in the desktop study and ENM, Forest and Bird and DOC were contacted multiple times and invited to participate in a semi-structured interview; of these, 19 CBCG representatives from 12 CBCGs participated, along with a representative from ENM and DOC. A total of 21 interviews were conducted between November 2020 and April 2023, including multiple representatives from some CBCGs.

The interviews were approximately 45 min and consisted of a series of open-ended questions; 9 questions for CBCG volunteers, with an additional 3 questions for CBCG leaders and other representatives (as outlined in Appendix 2). The questions related to their CBCG and volunteers, along with questions about volunteer motivations, recruitment and the retention of volunteers. Interviews were recorded, transcribed and analysed for key themes.

Questionnaire

An online questionnaire was also carried out consisting of 43 short answer and multi-choice questions, which covered volunteering details, demographics of volunteers, motivations for volunteering, commitment and satisfaction, barriers to volunteering, environmental monitoring and attitudes towards pro-environmental behaviours. There was also an open ended question at the end for participants to share any other thoughts or experiences.

Targeted and snowball approaches to sampling were used to recruit volunteers to complete the questionnaire (Sarantakos 2013; Denscombe 2014). Volunteers participating in CBC within the Manawatū region were reached via an email sent from ENM to all its active members; an advertisement was also placed in their October newsletter in 2021 and the 21 CBCGs that were identified in the desktop study were also sent the same email to their listed contact email on the same day. Initial recruitment emails were sent on October 29th 2021; reminder emails were sent on January 28th 2022 and the questionnaire was closed on February 24th 2022. Recipients of the email received a link to the questionnaire with an invitation to send it on to all their volunteers. The questionnaire

invitation included a short summary of the study, a link to the online questionnaire, and an option to have a paper version delivered to them if required. The online questionnaire was created and administered using Qualtrics™ (qualtrics.com); and the paper version was available via email request or collection from ENM's office in Palmerston North.

The questionnaire had 101 respondents, representing 17 of the 21 CBCGs identified in the desktop study, additionally there were responses from ENM, DOC and 4 small CBCGs that were not identified in the desktop study.

Results

The need for committed volunteers

Many interviewees argued that there was a need for more volunteers, particularly more committed volunteers. Several CBCG leaders explained that their group had enough volunteers on paper but needed more volunteers that participate regularly and are able to complete tasks with little or no instruction:

> There's always a need for more volunteers, committed volunteers. (CBCG leader)

> There's a need for people who are going to put the time in and can help quite a bit with the momentum rather than just hands to plant plants. (CBCG key representative)

> There's also a need for volunteers because it's about splitting up the jobs, so there's actually less pressure on people and you can do more of something. But you have to find the right people. (CBCG board member)

Interviewees also discussed the need for volunteers that were willing to do undesirable yet necessary tasks:

> It's very easy to get plenty of people out to plant plants, it's extremely hard to get the same number of people out to free them up for the next four years amongst the blackberry and tall grass. (CBGC key representative)

They also highlighted the need for more volunteers willing to take on leadership roles and capable of taking responsibility for the operation of the CBCG when necessary:

> There are not enough people wanting to lead. (CBCG leader)

> Succession is a big issue with volunteer groups for sure. The energy of one or two people is critical. (CBCG trustee)

Demographics of CBC volunteers

Volunteers who responded to the survey tended to be older, highly educated and either retired or in less than full time employment. There were slightly more females than males with 53% female, 46% male, and 1% identifying as non-binary. There was also a wide age range among the volunteers, with a high proportion of older individuals; 14% of respondents were aged under 29, 7% aged between 30-39, 9% aged between 40-49, 16% aged between 50-59, 24% from 60–69 years and 30% aged 70 and over. The volunteers also tended to have a high level of education with 14% completing secondary school and 85% of volunteers having some form of tertiary education, including 16% having a

PhD. The largest group of respondents were retired (47%), followed by those in paid employment for less than 30 h per week (21%) and those in paid employment for 30 h or more per week (18.6%). There was also a small proportion of students (9%) and those who were unemployed (4%).

Frequency and commitment of volunteers

Survey respondents had volunteered in CBC activities from a few months to over 40 years, with the highest proportion of respondents having volunteered between 1 and 5 years (41.9%), and the smallest proportion for 16–20 years (5.4%). There was also a range of volunteering frequency with the highest proportion of respondents volunteering more than once a week (34.6%), followed by monthly (20.5%), weekly (18.0%), fortnightly (10.2%) and a few times a year (9.0%), with a small proportion stating they were unsure (7.7%).

Only 18.6% of respondents stated that the types of activities offered by their CBCG influence how frequently they volunteer. Activities identified by these respondents included to be more hands on with animals, having new experiences, being able to educate younger volunteers and caring for wildlife.

A high proportion (61%) of respondents stated that volunteering was enjoyable (4) or very enjoyable (5), with no respondents stating it as not enjoyable (1), when enjoyment was ranked from 1 not enjoyable to 5 very enjoyable.

Just over half of the respondents stated that they were very committed to their CBCG, and no respondents stated that they were not committed (as illustrated in Figure 2).

There is a clear relationship between perceived enjoyment and commitment, with respondents that reported a high level of enjoyment also tending to report a high level of commitment (as illustrated in Table 1).

Long-term motivation factors

Initial motivations are the factors that originally encouraged people to start volunteering, whereas long-term motivations are factors that contributed to volunteers' continued volunteering and increased frequency in volunteering. Table 2 shows how volunteers ranked the importance of long-term motivation factors, which are then compared to initial motivations in Table 3.

The four long-term motivations that were identified as the most important by respondents were 'to care for the environment' (m = 4.59), 'to help the local community' (m = 4.19), 'as a connection to nature' (m = 3.96) and 'to be outside, or amongst nature' (m = 3.96), which all connect to the broad themes of environment and community. Interviewees reinforced the finding that volunteer motivation is often underpinned by a desire to make a meaningful contribution:

> For me it's about feeling purposeful. I don't want to fill in time I want to do something that matters. (CBCG key representative)

> It's absolutely critical that people go away saying good I achieved something. I think [volunteers] find satisfaction in learning and feeling that they have really done something worthwhile. (CBCG leader)

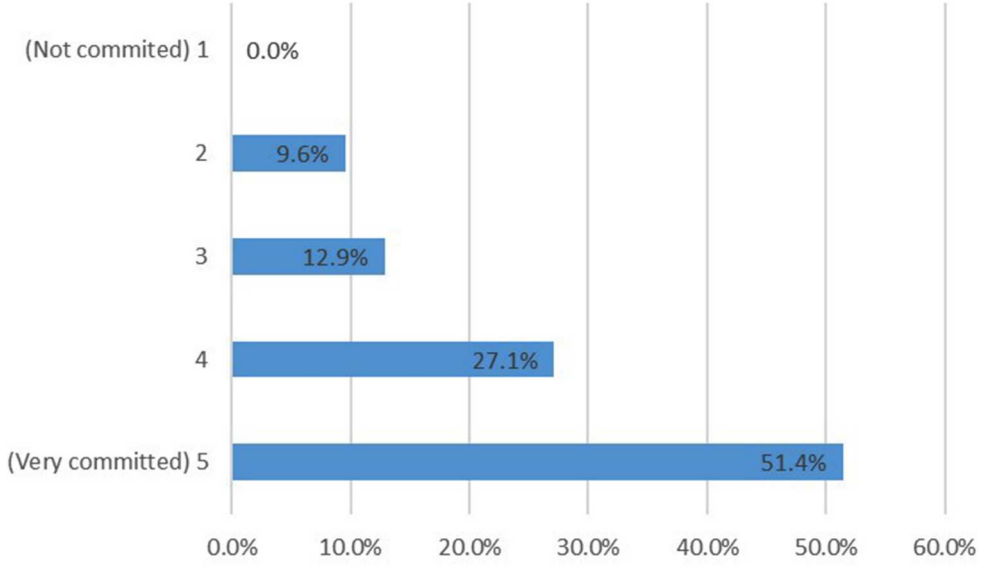

Figure 2. The proportion of volunteers' commitment level when ranked from 1 (not committed) to 5 (very committed) (N = 70).

Table 1. The relationship between perceived commitment and perceived enjoyment of respondents (N = 70).

		Perceived enjoyment					
		1 (Not enjoyable)	2	3	4	5 (Very enjoyable)	Total
Perceived commitment	1 (Not committed)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2	0.0%	0.0%	36.4%	4.8%	2.7%	8.6%
	3	0.0%	0.0%	18.2%	28.6%	2.7%	12.9%
	4	0.0%	0.0%	27.3%	33.3%	21.6%	25.7%
	5 (Very committed)	0.0%	0.0%	18.2%	33.3%	73.0%	51.4%

Table 2. Mean motivation factors for long-term volunteering, ranked from 1 (not important) to 5 (very important).

Long-term Motivation Factors	Mean	(S.D)	Variance
To care for the environment	4.59	0.73	0.53
To help the local community	4.19	1.08	1.17
To be outside, or amongst nature	3.96	1.31	1.71
As a connection to nature	3.96	1.24	1.54
To learn new skills, or knowledge	3.33	1.36	1.86
To educate others	3.22	1.48	2.2
For personal growth	3.19	1.49	2.22
To socialise with others	3.18	1.34	1.79
To be involved in a well-run project	3.15	1.48	2.18
As an obligation to a group	2.96	1.38	1.9
For stress relief or escape	2.68	1.4	1.95
To get exercise	2.67	1.29	1.68
To advance my career	1.74	1.28	1.65

Table 3. Comparison of motivation factors that encourage participation in community-based conservation initially and in the long-term.

Motivation Factor	Initial mean	Long-term mean	Difference in means
To socialise with others	2.83	3.18	0.35
For stress relief or escape	2.36	2.68	0.32
To help the local community	3.99	4.19	0.2
For personal growth	3.07	3.19	0.12
To be involved in a well-run project	3.03	3.15	0.12
To get exercise	2.55	2.67	0.12
To advance my career	1.73	1.74	0.1
To care for the environment	4.51	4.59	0.08
To be outside, or amongst nature	3.91	3.96	0.05
As a connection to nature	3.92	3.96	0.04
To educate others	3.18	3.22	0.04
To learn new skills, or knowledge	3.64	3.33	-0.31

The three motivations that were identified as the least important on average were 'to advance my career' (m = 1.74), 'to get exercise' (m = 2.67) and 'for stress relief or escape' (m = 2.68) and tend to be linked to more personal factors and goals of the individual volunteer.

When initial motivation factors are compared to long-term motivation factors (see Table 3), the top four motivation factors remain the same and there are a few differences between long-term and initial motivation factors in general. 'To learn new skills, or knowledge' is the only motivational factor that decreased from initial to long-term motivations. There are also a few factors that increased substantially including 'to help the local community', 'to socialize with others' and 'for stress relief or escape'.

There were also positive relationships between perceived commitment level and specific motivation factors including; 'as a connection to nature', 'to be outside amongst nature' and 'to care for the environment' as illustrated in Table 4. The higher the importance of these motivational factors, the higher the level of commitment.

Table 4. The relationship between commitment level and three long term motivation factors (N = 70).

		Importance of 'to care for the environment' as a motivational factor					
		1	2	3	4	5	**Total**
Perceived commitment	1 (not committed)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2	0.0%	0.0%	50.0%	5.9%	6.3%	8.6%
	3	0.0%	0.0%	25.0%	23.5%	8.3%	12.9%
	4	0.0%	0.0%	0.00%	41.2%	25.0%	27.1%
	5 (very committed)	0.0%	0.0%	25.0%	29.4%	56.3%	47.1%
		Importance of 'to be outside, or amongst nature' as a motivational factor					
		1	2	3	4	5	**Total**
Perceived commitment	1 (not committed)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2	42.9%	25.0%	0.0%	5.0%	3.2%	9.0%
	3	0.0%	50.0%	0.0%	10.0%	16.1%	13.4%
	4	14.3%	25.0%	40.0%	40.0%	19.4%	26.9%
	5 (very committed)	28.6%	0.0%	60.0%	45.0%	54.8%	46.3%
		Importance of 'as a connection to nature' As a motivational factor					
		1	2	3	4	5	**Total**
Perceived commitment	1 (not committed)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2	50.0%	33.3%	0.0%	9.5%	0.0%	9.0%
	3	0.0%	33.3%	12.5%	9.5%	17.2%	13.4%
	4	16.7%	33.3%	50.0%	28.6%	20.7%	26.9%
	5 (very committed)	16.7%	0.0%	37.5%	52.4%	55.2%	46.3%

Volunteer connection

A connection to nature or a place was often identified by interviewees as a reason why volunteers were interested in CBC volunteering:

> It's helping the community get a connection back with the waterway … it's about [volunteers] having a better connection with the waterway, and seeing them as a living thing that does have fish and value rather than somewhere to just dump your rubbish. (CBC programme coordinator)

> It's the tangible stuff that tugs on the strings a bit I think. (CBCG leader)

It was clear that volunteers' connection to a specific place often underpinned their desire to participate:

> You appreciate a place for what it is and it's not good to see it being wrecked … we have a connection to Foxton beach. (CBCG trustee)

> Locally a lot of people spent quite a bit of time up in the Ruahines and Tararuas[3], it's a big push for a lot of people they really want to protect those, because they feel connected. Connection is a big one … connection to the place, special species, taonga[4]species, quite often people want to get involved with stuff like that. To do with the bush, the birds. (DOC representative)

Interviewees also highlighted the importance of social connections offered by participating in CBCGs:

> There are people who like to be connected, who like being out and about with a small group or just getting a sense of belonging. (CBCG leader)

A high proportion of the volunteers surveyed had a connection to the group they volunteered for, the place they volunteered and nature in general while volunteering. The highest proportion of respondents characterised their connection to all three factors as very important shown in Table 5.

Retaining committed volunteers

CBCG leaders that were interviewed shared several strategies they used to encourage volunteers to continue to participate. In particular, they explained that it was important to offer volunteers a range of different tasks to reflect different peoples' interests and abilities:

> I try to give people choices so that if they're uncomfortable about doing something, there's another thing that they could do. (CBCG leader)

Table 5. Percentage of volunteer perceived connection to CBCG, place where they volunteer, and nature in general while volunteering.

Rank (1-5)	Connection to CBCG	Connection to place	Connection to nature
1 (no connection)	0.0%	2.9%	1.4%
2	7.1%	5.8%	5.7%
3	14.3%	7.3%	11.4%
4	30.0%	20.3%	30.0%
5 (very connected)	48.6%	63.8%	51.4%

> We are constantly looking at what volunteers can be doing because obviously the skill base and that sort of thing is amazing with volunteers. You have people that have more skills than any of us (employees) at doing everything you can imagine. (CBCG employee).

The ENM encourages collective action and inspires *CBCGs 'to work together on a common theme, to support each other and to really strengthen each other's voice' (ENM representative)*. ENM has created a place where CBCGs '*can be more successful, better connected, working towards shared visions' (ENM representative)*. Interviewees also emphasised the valued of ENM as an umbrella group providing member organisations with support and a platform to connect with one another:

> We find ENM just crucial, and if you are connected to them you will be fine. We are just tiny leaves fluttering in the breeze if it wasn't for the network. They bring us all together. (CBCG trustee)

> It's not just a couple of people being busy bodies in a corner, there's actually a whole linkage. There's people interacting with the council. It's linked so although I'm only doing a little bit, I know I'm part of a bigger picture. (CBCG key representative)

> It's great because you feel part of something bigger. (CBCG leader)

Discussion

Key characteristics of community-based conversation volunteers

CBC volunteers in the Manawatū are typically older, retired and have a higher level of education than the general population. These trends have also been found in other studies about CBC and environmental volunteering, such as research by Chase and Levine (2018) and Heimann and Medvecky (2022). Interviews with key CBCG representatives revealed that most CBCGs have a core group of approximately 6 volunteers, who are very committed and turn up to regular working bees, events and meetings. They also have another cohort of volunteers who are less regular and turn up more spontaneously, often consisting of 20–50 individuals. Our results found that 34.6% of respondents were volunteering more than once a week and 18.0% were volunteering once a week, with 51.4% of volunteers perceiving themselves to be 'very committed' suggesting that a large proportion of respondents were from the core groups of CBC volunteers.[5]

Another interesting finding was that out of the volunteers that perceived themselves as 'very committed' over 60% were over 60 years old, and only 8.4% were under 29 years old. These findings align with a study by Madsen et al (2021) in which older volunteers were more likely to commit to volunteering than younger volunteers. Retired people are a great source of committed volunteers, typically due to having spare time and wanting to be involved in something with purpose (Pillemer et al. 2017). CBC volunteering is also beneficial to older people as it can have a positive impact on physical and mental health (Pillemer et al. 2017; Ding and Schuett 2020; Chen et al. 2022). However, CBCGs reliance on older volunteers also gives rise to several challenges. For example, older volunteers are more prone to health and mobility issues that can limit volunteering opportunities, or mean that they need to transition to less physical roles. Studies have shown that poor mobility and poor health, as a result of getting older were stated by volunteers as barriers to environmental volunteering (Pope 2005; Hvenegaard and Perkins

2019). There is also evidence that increased turnover rates and burnout of volunteers is more common among older volunteers (Hvenegaard and Perkins 2019). Given the disproportionate number of older volunteers, it is important that CBCGs are flexible around volunteer commitment levels and volunteering hours, and offer a range of tasks that vary in physical ability (Bramston et al. 2011; Frensley et al. 2017; Pagès et al. 2018; Schild 2018; Larson et al. 2020).

Factors motivating community-based conservation volunteers

Some motivational factors appear more important for CBC volunteers in the Manawatū, particularly 'helping the environment', 'helping the local community', 'to be outside, amongst nature' and 'as a connection to nature'. Other factors such as 'to get exercise' and 'to advance my career' were less important. Our study also found some differences between initial and long term motivation factors of respondents, with long term volunteers identifying 'to socialise with others', 'for stress relief or escape' and 'to help the local community' as more important in the long term than initially.

With a constant need for more volunteers, understanding volunteer motivations is an important aspect of volunteer recruitment and retention. Several leaders of local CBCGs within the Manawatū emphasised that there is a need for more volunteers, particularly committed volunteers. It was clear in interviews that although there is always a need for volunteers CBCG leaders wanted to appeal to a smaller number of people who would become regular long term volunteers, rather than having lots of people that would show up once or twice. There was also an emphasis on a need for volunteers that would do a range of tasks that are less desirable such as weeding and ongoing maintenance, not just plantings or hands-on work with native wildlife, which is more typical of committed volunteers.

Our survey results also illustrated that volunteers' enjoyment and commitment were linked, with higher enjoyment leading to higher commitment. This is in line with a few studies that found that volunteers who have their motivations fulfilled are more likely to feel satisfied, leading to a higher probability of continued participation and commitment (Domroese and Johnson 2017; Takase et al. 2019; Ding and Schuett 2020). Therefore, in order to increase the satisfaction and commitment of volunteers it would be worthwhile to design projects that provide a variety of activities which align with key motivational factors, and incorporate a range of motivation factors throughout the project (New 2010; Simakole et al. 2019). For example, the 'to socialise' motivational factor could be easily added into a project design by giving people the option to work in small groups and allowing time for socialising after a working bee or event. The 'to help the environment' motivational factor could be incorporated by setting clear environmental goals, providing environmental education opportunities for volunteers and highlighting and celebrating progress at the end of a working bee or event. Another way to increase volunteer satisfaction is to provide volunteers with positive feedback and recognition (Hvenegaard and Perkins 2019; Gulliver et al. 2022), so they feel as though the work they have done is worthwhile and valuable. 'Doing something worthwhile' was an important aspect of volunteering among CBCG volunteers in the Manawatū. When it comes to CBC it is beneficial to focus on concepts the community can identify with personally (New 2010), and for people to not only see their progress but understand the importance behind what

they are doing, so they can feel satisfied and purposeful. In turn this leads to an increase in environmental awareness and a desire to continue to contribute to conservation outcomes.

Some authors argue that there is a difference in motivational factors between initial and long-term volunteers, and that projects should offer a range of opportunities for different commitment levels (Hvenegaard and Perkins 2019; McAteer et al. 2021). Studies show that people are often motivated to start volunteering because of a desire to help the environment and a need to socialise with others (Pagès et al. 2018; Schild 2018). Whereas, long-term volunteers are often found to be motivated by feeling like a part of a community, personal experiences, attachment to a group or place, to be part of a well-run project and also to socialise with others (Asah and Blahna 2013; Frensley et al. 2017; Pagès et al. 2018; Schild 2018). Some of the CBCG representatives interviewed were successful in offering a range of tasks, that encouraged the use of different skills and abilities, within their group of volunteers. Offering a range of tasks for volunteers is important to encourage continued participation, whether it is to offer a range of tasks that appeal to different skills, abilities or motivation factors, or to allow committed volunteers to take on a more leadership-based role. However, within our group of CBCGs a prevalent issue was succession of leaders. There tended to be a few key volunteers who keep the momentum going but a lack of people to replace or come alongside them. In order for CBCGs to be successful long-term and avoid the burn-out of key volunteers it is important the committed volunteers are encouraged to take leadership or management roles. Other studies have found that it is important that volunteers are given the opportunity for ongoing education and training, and are recognised for their efforts in order to build confidence which can lead to a desire to take on a leadership or management role (Frensley et al. 2017; Hvenegaard and Perkins 2019; Gulliver et al. 2022). Few CBCGs in the Manawatū offer educational opportunities, with little mention of education or training of volunteers in interviews and on the questionnaire.

Our survey found some differences between initial and long-term motivations of CBC volunteers, but the relative importance of motivation factors between initial and long-term did not really change. However, the results indicate that volunteers increasingly value socialisation, stress relief/escape and the idea of helping the local community, and value the ability to learn new skills and knowledge less. The opportunity for socialisation between volunteers has been found to be a key aspect in successful volunteer-based projects (Laverie and McDonald 2007; Pagès et al. 2018; Schild 2018; Hvenegaard and Perkins 2019; Ding and Schuett 2020). However, 'to socialise with others' wasn't identified as very important as an initial motivation factor in our study, so it therefore makes sense that as volunteers get to know each other the social aspect of volunteering becomes more important, as opposed to 'to help the environment' which was already ranked relatively high and so unlikely to increase substantially. An increase in the desire 'to help the local community' is also expected as volunteering in a local area has been found to promote relationships between locals, help develop self-efficacy (Ohmer et al. 2009), and contribute to an attachment to place. This makes it more likely that volunteers would continue to restore or enhance a local area. There is a wealth of literature on the health benefits of volunteering, particularly CBC and environmental volunteering. Consequently, volunteers may have found that after volunteering for some time that they are benefiting from the mental health benefits, including stress relief. The decrease in

importance of learning new skills and knowledge could be due to the fact that there is minimal training and education available for CBC volunteers in the Manawatū region, and therefore they may just be doing the same tasks each time they volunteer. However, it may be that once volunteers reach a certain level of skill and experience there isn't much more to learn within a given group, and hence the importance of this aspect diminishes over time, relative to other aspects.

Attracting and retaining committed volunteers

As mentioned above, Predator Free 2050 is a national programme that is dependent on the collaborative effort of iwi, CBCGs, councils, NGOs and government stakeholders, with a considerable reliance on volunteers across the country. To be successful it requires committed volunteers on the ground regularly laying, checking and maintaining traps, alongside the collection of significant amounts of data (Department of Conservation 2020, 2021). Motivational factors play an important role in having committed volunteers, therefore a better understanding of what drives volunteers is likely to lead to improved success rates and environmental outcomes. However, the volunteer workforce in the conservation area is limited and there is a definite need for more committed volunteers already, without the additional pressure of Predator Free 2050. This raises the question of whether or not Predator Free 2050 is a realistic goal especially with the strong reliance on volunteers and the community, instead of being fully funded by the government. In order for New Zealand to be able to achieve such an ambitious conservation goal, the government needs to dramatically increase support and funding to CBCGs that are implementing the practical measures needed to achieve Predator Free 2050s objectives. However, the recent change in government suggests this is unlikely to happen (Environmental Defence Society, 2024) and the success of Predator Free 2050 will remain highly dependent on committed volunteers.

There have been limited studies on volunteer motivations in New Zealand, and none that have investigated the Manawatū region. The Manawatū is a region that has experienced significant loss in biodiversity and clearing of original habitats. Therefore, this region is in dire need of habitat rehabilitation and support of its limited remnant habitats. This study gives us a clearer understanding of what drives local CBCGs to help protect and enhance local areas, address local conservation issues, and be involved in national conservation efforts. The results from this study also add to other studies both in New Zealand and overseas to allow us to see general trends in what motivates CBC volunteers, and how to build a volunteer force that is committed to achieving both local, national and international conservation goals.

Successful volunteer-based projects have been found to account for volunteer motivations and socialisation; they tend to be focused, long-term and provide volunteers with training, support and recognition (Bruyere and Rappe 2007; Van Den et al. 2009; Newton et al. 2014; Gulliver et al. 2022). These factors are often mentioned in the literature and are thought to positively impact volunteer satisfaction, and therefore commitment (Newton et al. 2014; Frensley et al. 2017; Hvenegaard and Perkins 2019; Ding and Schuett 2020; Gulliver et al. 2022). The interviews with CBC volunteers revealed that most of the CBCGs have a social aspect to them and allow time for volunteers to get to know each other; there was an awareness of key factors that motivate people, but

more could be done to incorporate motivations in project designs. The success and focus of long-term projects tended to be very dependent on a few key individuals, but overall, there was a recognition of the worth of volunteers. The key concept that is regularly mentioned in the literature to improve volunteer commitment, but is limited in Manawatū CBCGs, is ongoing training and education, which may contribute to the difficulties with the succession of leaders within the groups. Many of the CBCGs in the Manawatū are small and have minimal funding therefore in order to achieve effective training and education would require a government organisation, such as DOC, or a larger umbrella group to step up to fund and run targeted training courses.

The importance of volunteer connection

Many CBC volunteers have a desire to see and be in nature, along with a concern for the environment (Gooch 2003; Krasny et al. 2014). There is a significant body of literature on connecting people with the environment, and the impact this connection has on environmental values and actions, including its impact on CBC volunteering (Laverie and McDonald 2007; Nisbet et al. 2009; Pagès et al. 2018; Schild 2018). Schild (2018) found that volunteers experienced an improved connection to nature and to the place where they were volunteering; this is consistent with the findings of Gooch (2003) and Ryan (2005). Furthermore, a study by Pagès et al. (2018) found that attachments to place and wildlife are often closely linked to the motivation factors of environmental volunteers. This aligns with our study in which volunteers who perceived themselves to be highly connected to place tended to find the following motivation factors of high importance: 'to care for the environment', 'to be outside, or amongst nature' and 'to help the local community'. Several studies argue that an attachment to place, and connection to nature can also act as independent motivation factors (Gooch 2003; Schild 2018).

Several interviewees of CBCG's in the Manawatū identified forms of connection as key motivation factors and therefore the connection to a place is a great way of recruiting volunteers and getting them involved in local conservation efforts. CBC volunteers' connection to a place often drove their desire to participate, as they wanted to protect or restore a place that is close to their heart, in their local community. Building a connection between the community and local green spaces, or targeting people who already have a connection to these spaces, could be an effective way of attracting committed volunteers. Another way to promote a connection which was mentioned by Forgie et al. (2001) is to promote the uniqueness of New Zealand's biodiversity so people develop a deep commitment to the environment. In the interviews with leaders of CBCGs it was mentioned that some of the most committed volunteers tend to be the ones that live nearby the volunteering sites and use them regularly for recreation or relaxation. So encouraging people to use green spaces in a respectful way could promote a connection to conservation sites, and thereby increase the number of people who care for the site and in turn increase people willing to volunteer in order to protect or restore the site.

Interviewees often mentioned the concept of connecting with other CBCGs or working together to achieve conservation outcomes. This was especially important to the smaller groups, as it made them feel like they were a part of something bigger and worthwhile. The Environment Network Manawatū (ENM) was often mentioned as a vital mechanism to bring groups together. Most of the interviewees representing CBCGs that are associated

with the ENM expressed that they felt well supported and connected by the network. However, some believed there was still a need for further cooperation between CBCGs. From discussions with CBCG leaders it is clear that for the most part ENM does an exemplary job of supporting CBCGs and bringing them together on large over-arching projects, in a way that allows the CBCGs to decide what they want to come together to achieve. However, not all CBCGs are going to be interested in every combined project, and the specific goals of individual CBCGs may not align with the current combined project but future projects may be more aligned to a different selection of CBCGs.

Conclusion

In conclusion, this study contributes to our understanding of long-term motivations of individuals involved in CBC and environmental volunteering. This study investigated CBC volunteers in Manawatū, New Zealand, a region that is in need of significant habitat restoration and protection, by interviewing and surveying the people who are actively making a difference. In-person interviews often at conservation sites allowed for a deep understanding of why they were volunteering and what support was needed for them to continue to make an impact. Volunteers play a key role in environmental projects, and therefore it is important to be able to not only recruit but retain volunteers, particularly committed volunteers. If environmental projects are to have positive long-term effects on the environment, a continuous effort is crucial. Thus, it is important that volunteer motivations are taken into account initially and throughout projects, so that volunteers are satisfied and engaged. Ideally there should also be a range of tasks for volunteers that cater for different motivational factors, including tasks that lead into leadership roles. Volunteers also need to have time to socialise with others, feel appreciated and have access to targeted, ongoing education and training.

'To help the environment' was identified as the top motivation factor by CBC volunteers in the Manawatū. So, it would be beneficial to actively incorporate this motivation factor into local CBC projects. This can be achieved by having clear, transparent environmental goals, providing opportunities for volunteers to engage in relevant environmental education, acknowledging and celebrating progress toward achieving goals and clearly communicating the next steps to move forward. Building a connection to nature and/or an attachment to place through volunteer experiences can also be an effective way to attract and retain committed volunteers. Local residents and users of local green spaces may already have a connection to the place and therefore make a great target pool for volunteers. Helping individuals build a connection by highlighting the uniqueness and beauty of local areas and emphasising the important role of CBC in protecting them can also help attract and retain committed volunteers.

With the government increasingly relying on volunteers to help achieve biodiversity goals and drive national conservation initiatives, such as Predator Free 2050, it is critical that there is more research around motivation factors that promote committed CBC volunteers. This study takes a local, on-the-ground approach to gain an understanding of local CBCGs and what drives their volunteers. Similar studies in other regions would help verify our findings and identify the key motivation factors that drive CBC throughout New Zealand. Further research is also needed to continue to examine the role motivation factors play in the commitment of CBC volunteers, and how to increase not only

volunteers but committed volunteers. It is essential that CBCGs are effective and able to contribute to local, and/or national conservation goals. As such, further investigation into community-based environmental monitoring and the motivation factors that encourage volunteers to be involved in data collection would help to find ways to increase community-based environmental monitoring and allow CBCGs to track the progress and effectiveness of local conservation projects.

Notes

1. The Environment Network Manawatū is a network of member groups that supports and encourages environmental initiatives in the Manawatū, in areas ranging from sustainable living to wildlife conservation.
2. Forest and Bird is the leading conservation NGO in New Zealand.
3. Two mountain ranges which form the Eastern boundary of the Manawatū region.
4. Taonga is a is a Māori word that refers to a treasured possession, or highly prized object.
5. Although our questionnaire was distributed to as many CBCG volunteers in the Manawatū as possible, due to the voluntary nature of participation it is likely that more committed volunteers were more likely to complete the questionnaire.

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Disclosure statement

No potential conflict of interest was reported by the author(s).

Author contributions

The primary author is Charlotte Sextus who collected and analysed the data, and wrote the manuscript. Karen Hytten and Paul Perry are co-authors who supervised the research and contributed to writing and revising the manuscript.

Ethical statement

This research was undertaken in accordance with Massey University's Code of Ethical Conduct for Research, Teaching and Evalutations Involving Human Participants.

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Appendix 10: The published version of Chapter 6

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RESEARCH PAPER
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PACIFIC CONSERVATION BIOLOGY

Barriers to volunteering and other challenges facing community-based conservation in Aotearoa New Zealand

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ABSTRACT

Context. In many countries, community-based conservation plays an important role in protecting natural ecosystems and preserving biodiversity. However, community-based conservation groups face a variety of challenges including recruiting and retaining volunteers, maintaining relationships with stakeholders and monitoring progress towards achieving conservation objectives. In order to address these challenges, it is important to understand the barriers to volunteering, and ways to assess and improve effectiveness. **Methods.** This research explores these barriers and looks at some potential solutions through a case study of community-based conservation in the Manawatū region of Aotearoa New Zealand. Twenty-one in-depth, semi-structured interviews were carried out with group leaders and other key stakeholders and an online questionnaire was used to explore the experiences and perspectives of volunteers participating in community-based conservation initiatives. **Key results.** Our research showed that one of the most effective ways of recruiting new volunteers was through social interaction and that the main barriers to participation were time commitment and health issues. **Conclusions.** Relationships between volunteers, non-government organisations and government agencies impact the success of local groups, and environmental monitoring was key to obtaining funding and documenting success. **Implications.** A collaborative approach creates a framework that encourages participation by empowering communities to work together on conservation initiatives, and can increase volunteer commitment. Increased recognition of the importance of Māori culture and interests will also further collaboration with Indigenous communities.

Keywords: community-based conservation, community-based environmental monitoring, environmental volunteering, leadership succession, New Zealand, volunteer recruitment, volunteer retention, volunteering barriers.

Introduction

Community-based conservation (CBC) relies on hard-working volunteers and the support of government agencies and non-government organisations (NGOs) to achieve conservation goals (Forgie *et al.* 2001). There are a range of factors that impact CBC effectiveness, including the capacity to recruit volunteers, barriers to volunteering, and relationships with volunteers, and other stakeholders (Forgie *et al.* 2001; Bushway *et al.* 2011; Liarakou *et al.* 2011; Higgins and Shackleton 2015). Community-based environmental monitoring is also important to CBC effectiveness as it allows community-based conservation groups (CBCGs) to assess their progress and apply for funding (Peters *et al.* 2015*a*, 2016; Sullivan and Molles 2016; Jones and Kirk 2018).

Environmental organisations often struggle to recruit and retain volunteers, leading to high volunteer turnover rates, and wasted time and resources in recruiting and training new volunteers (Bushway *et al.* 2011; Asah and Blahna 2013; Higgins and Shackleton 2015; Ding and Schuett 2020). Research into the participation in CBC has identified an array of barriers that prevent the general public from becoming involved in or continuing to be involved in CBC including a lack of awareness of opportunities (Hobbs and White 2012), time constraints, including work, study and family life balance (Higgins and Shackleton 2015; Frensley *et al.* 2017; Hvenegaard and Perkins 2019; Heimann and Medvecky 2022), proximity to home (Hobbs and White 2012; Madsen *et al.* 2021; Thomas *et al.* 2021),

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perceived confidence and capability to participate (Hobbs and White 2012), building relationships between volunteers, iwi[1] and government agencies (Forgie *et al.* 2001), and health issues including limited mobility (Hobbs and White 2012; Hvenegaard and Perkins 2019).

Due to the small number of volunteers in many CBCGs, there can be limited support for volunteers and leaders; this in turn can contribute to the loss of volunteers. Issues that can arise are volunteers feeling overwhelmed, being overworked, lacking a suitable role, having limited support, having inadequate training, poor organisational management, and feelings of obligation instead of satisfaction (Frensley *et al.* 2017; Schild 2018; Takase *et al.* 2019; Ganzevoort and van den Born 2020). Another important factor that influences the effectiveness of CBC is the relationships not only between volunteers but between CBCGs and other groups including iwi, NGOs, and local and regional government (Forgie *et al.* 2001; Wilson 2005; Peters *et al.* 2015*b*). Because CBCGs are often small and not well funded, they often rely on other groups and organisations for technical support, funding, and education and training programs. As a consequence, the success of CBCGs can be heavily impacted by the support of others, and many CBCGs would not be successful without help from other groups (Forgie *et al.* 2001). Local iwi play an important role in conservation efforts in Aotearoa New Zealand (Roberts *et al.* 1995; Taiepa *et al.* 1997). Both the Conservation Act 1987 (NZ) and the Resource Management Act 1990 (NZ) explicitly require all persons exercising functions and powers under them to give effect to the principles of the Treaty of Waitangi (Ti Tiriti o Waitangi) (Environment Foundation 2018). Therefore, giving effect to the Treaty principles are crucial considerations for government agencies and community organisations involved in conservation management.

Community-based environmental monitoring is also key to effective CBC as it allows a CBCGs to track progress and success, allowing CBCGs to adjust their work accordingly to achieve conservation goals. Community-based environmental monitoring, also sometimes referred to as volunteer monitoring or participatory resource monitoring, is a form of citizen science where volunteers track changes in species abundance and distribution, measure ecosystem health and, in some instances, provide data for local, regional and national decision making (Dickinson *et al.* 2012; Gura 2013; Peters *et al.* 2015*a*; Galbraith *et al.* 2016; Orchard 2019). Community-based environmental monitoring can range from a simple one-off experiment to an expansive, long-term study (Dickinson *et al.* 2012), and is used for a wide variety of reasons including large scale data collection (Dickinson *et al.* 2012; Silvertown *et al.* 2013; Peters *et al.* 2015*a*; Galbraith *et al.* 2016); education (Crall *et al.* 2013; Gura 2013); building relationships between local people, businesses and government (Peters *et al.* 2015*b*); and to help with CBC management (Conrad and Hilchey 2011; Orchard 2019). Some examples of community-based environmental monitoring methods employed by CBCGs include species counts (to monitor species abundance and distribution by counting species in a given area), photo points (to track progress of a specific area by periodically taking photos from the same location), pest tracking tunnels (to identify and track the abundance of pest species in the area by footprint tracks) and 5-min bird counts (to identify the presence of bird species in an area by their call) (Sher and Molles 2022). Community-based environmental monitoring has become a common method for carrying out long term conservation studies and is often required when CBCGs apply for funding and grants (Dickinson *et al.* 2012; Silvertown *et al.* 2013).

In order to recruit new volunteers and reduce turnover rates, CBCGs need to have an understanding of the key barriers that restrict people from volunteering, and what can be done to alleviate them. There also needs to be clearer planning and the implementation of community-based environmental monitoring to track progress and allow CBCGS to obtain funding, along with strong relationships between local groups and other organisations. This research aims to address four key questions within the context of the Manawatū region of Aotearoa New Zealand: (1) What are the key barriers to CBC volunteering? (2) What can be done to improve volunteer retention? (3) How can strong relationships between CBCGs relevant stakeholders be developed? (4) How can CBCGs be encouraged and supported to implement community-based environmental monitoring?

This research contributes to the growing literature on the CBC, and the limited studies carried out in Aotearoa New Zealand. In particular, this research seeks to fill a gap in the literature by interviewing and surveying local volunteers in the Manawatū region. The Manawatū region was selected for this study as the region has been greatly impacted by native habitat loss and the introduction of mammalian predators. Therefore, this region is in dire need of ecological restoration, habitat protection and targeted predator control (Craig *et al.* 2000; Jones and Kirk 2018). The Manawatū region is also a good place for a case study as the region's demographic characteristics are close to the New Zealand average (McKinnon 2015; Stats NZ 2018*a*). As such, as well providing insights into the local context, the findings of this study can inform CBCG efforts to recruit and retain volunteers across Aotearoa New Zealand. This study is relevant to a variety of fields including conservation biology and environmental management.

Materials and methods

This paper examines the barriers and challenges faced by CBC volunteers in the Manawatū region of Aotearoa New Zealand. A mixed-methods approach was used including a desktop

[1]Iwi are an 'extended kinship group, tribe, nation, people, nationality' and 'often refers to a large group of people descended from a common ancestor and associated with a distinct territory' (Moorfield 2024).

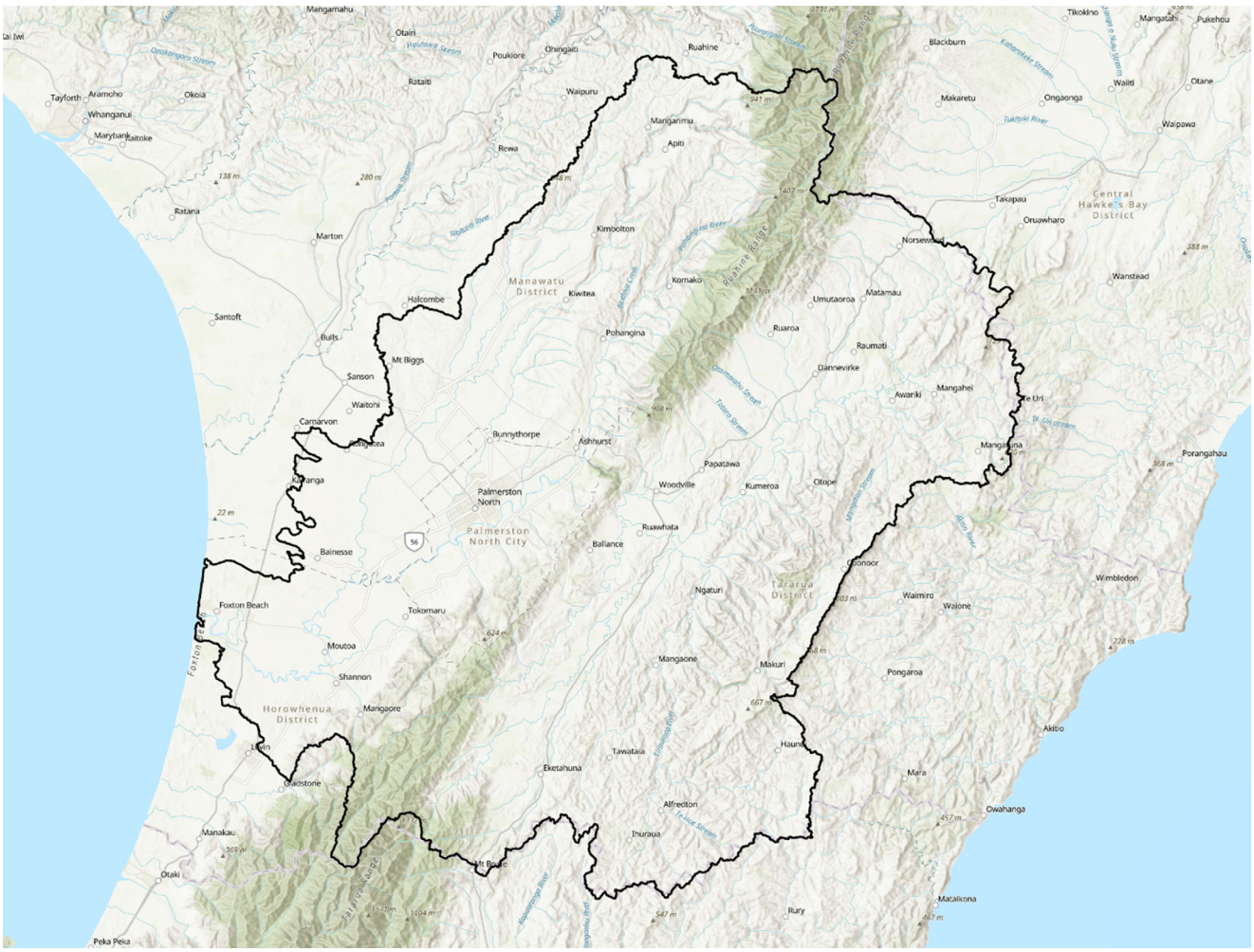

Fig. 1. Map of the Manawatū in Aotearoa New Zealand.

study of local CBCGs, semi-structured interviews with CBCG coordinators and stakeholders and a questionnaire for CBC volunteers.

The Manawatū region is located in the lower half of the North Island of Aotearoa New Zealand (Fig. 1). The main population centre is Palmerston North with a population of approximately 85,000 (Stats NZ 2018*b*). There are also several smaller towns including Feilding, Woodville, Dannevirke, Pahiatua and Foxton. The Manawatū River runs through the Manawatū and is 235 km long with a number of large tributaries including the Oroua, Mangatainoka, Mangahao, Pohangina and Tiraumea (Land Air Water Aotearoa 2024). The catchment includes a series of mountain ranges notably the Tararua and Ruahine ranges, and plains that extend between the ranges and the sea.

The Manawatū has several areas of ecological significance including the Manawatū Gorge Scenic Reserve, and the Manawatū Estuary that is an internationally recognised Ramsar site at Foxton Beach (National Wetland Trust of New Zealand 2023). The Manawatū is known for its agricultural sector, which includes dairy cattle farming, sheep and beef cattle farming (Figure NZ Trust 2023); (1) Massey University; (2) the Universal College of Learning; and (3) the Institute of the Pacific United. As a result, it has an unusually high proportion of highly-educated residents for a town of its size, including a large number of tertiary students as well as many current and retired academics.

Desktop study and systematic review

A preliminary online investigation was carried out to identify all CBCGs currently operating in the Manawatū. The websites of The Environment Network Manawatū (ENM)[2], Forest and Bird[3] and the Department of Conservation (DOC) were

[2]The Environment Network Manawatū is a network of member groups that supports and encourages environmental initiatives in the Manawatū, in areas ranging from sustainable living to wildlife conservation (Environment Network Manawatū 2023).
[3]Forest and Bird is the peak NGO advocating for nature conservation in New Zealand (Forest and Bird 2023).

examined in order to find all relevant groups based in the Manawatū, which have conservation-based objectives. In total, 21 CBCGs were identified. These groups carry out a wide variety of tasks including predator control, planting native vegetation, weeding, growing native plants, habitat restoration, education, advocacy, and litter collection. For a summary of the information collected about each of the CBCGs, see Supplementary material Table S1.

A systematic literature review was then carried to identify, synthesise and analyse the peer-reviewed literature on motivations of environmental volunteers to pinpoint key factors influencing volunteer motivations, barriers and satisfaction, and develop the interview and questionnaire instruments (see Sextus *et al.* 2024*a*). In particular, key sources that contributed to developing the interview and questionnaire questions included: Clary *et al.* (1998), Ryan *et al.* (2001), Bruyere and Rappe (2007), Hvenegaard and Perkins (2019) and Heimann and Medvecky (2022).

Semi-structured interviews

After obtaining ethics approval in accordance with the Massey University Code of Ethical Conduct for Research, Teaching and Evaluations Involving Human Participants, each of the 21 CBCGs, ENM, Forest and Bird and DOC were contacted via email and invited to participate in a semi-structured interview. A representative from DOC and ENM, and representatives from 12 CBCGs were interviewed. These interviews provided a comprehensive overview of the local CBCGs and their volunteers, with a particular focus on individuals' motivations to participate in CBC volunteering and barriers and challenges faced by volunteers and groups. A total of 21 interviews were conducted between November 2020 and April 2023.

Each interview was approximately 45 min and consisted of nine open-ended questions for CBCG volunteers and an additional three questions for CBCG leaders and other representatives (Supplementary material file S1). Interviewees were asked about their CBCG and volunteers, and about their own personal experiences and motivations for volunteering. They were also asked about their perception of the motivation of other volunteers, limitations and issues around recruitment and retention and other challenges. Each interview was recorded, transcribed, and analysed for key themes. The issues and themes raised in the interviews, together with insights from the literature informed the development on the questionnaire for CBC volunteers.

Questionnaire

Additional data was collected via an online questionnaire consisting of short answer and multiple-choice questions, with a section at the end for participants to share any other thoughts or experiences. The online questionnaire was created and administered using Qualtrics (qualtrics.com); there was also a paper version provided at the ENM office and available upon request. Respondents had to be a volunteer, or have previously volunteered in a CBCG, in the Manawatū region. The questionnaire was open from 29 October 2021 to 24 February 2022.

Recruitment for the questionnaire was carried out using both targeted and snowball sampling (Sarantakos 2013; Denscombe 2014). Volunteers were reached via an email with a link to the questionnaire sent from the ENM to all its active members; an advertisement was also placed in the ENM newsletter. Each CBCG that was identified in the desktop study was also sent the same email to their listed contact email address. Recipients of the email received a link to the questionnaire with an invitation to send it on to all their volunteers or past volunteers. The questionnaire invitation included a short summary of the study, a link to the online questionnaire, and an option to have a paper version delivered to them if required. The questionnaire had 101 respondents, representing 21 CBCGs, and respondents from ENM and DOC. Seventeen of the 21 CBCGs identified in the desktop study, were represented along with four additional CBCGs that were not identified in the desktop study.

The questionnaire was designed to provide a well-rounded picture of the characteristics, behaviours, motivations of CBC volunteers in the Manawatū, and was developed from relevant literature and from information obtained from face-to-face interviews. The questionnaire consisted of 43 questions, which covered volunteering details, demographics of volunteers, motivations for environmental volunteering, commitment and satisfaction, barriers to volunteering, environmental monitoring, relationships with iwi and government organisations and attitudes towards pro-environmental behaviours. The responses to the questionnaire were first analysed using Qualtrics and then synthesised in the context of the key themes identified from the systematic literature review and the semi-structured interviews. The findings relating to barriers to CBC volunteering, volunteer recruitment, building relationships between stakeholders and environmental monitoring are described and discussed below (for the findings relating to long-term CBC volunteer motivations, volunteer commitment and satisfaction and pro-environmental behaviours please see (Sextus *et al.* 2024*b*).

Limitations

The key limitation of this study is that we were unable to obtain a random representative sample. The total number of CBC volunteers in the Manawatū is unknown and there is no list of current volunteers from where to select a random sample. Therefore, we attempted to reach as many CBC volunteers as possible using the strategies outlined above, including sharing the online questionnaire as widely as possible and making a paper copy of the questionnaire available to volunteers who might prefer to participate offline.

Ethics

A low-risk peer-reviewed process was completed.

Results

Characteristics of volunteers

The interviewees represented a variety of CBCGs from small groups consisting of approximately six volunteers to larger CBCGs with 30–40 volunteers. Interviewees were mostly leaders or long term volunteers of CBCGs within the Manawatū; however, some were also trustees and paid co-ordinators or employees of CBCGs. We also interviewed a representative from ENM and DOC. There was a wide age range among volunteers; from the youngest in their 20s to a large proportion of older, retired individuals. There were slightly more females than males. Many of the interviewees had degrees in a range of fields. All interviewees were extremely happy to discuss their CBCG and the role they play in conservation efforts in the Manawatū.

Volunteers who responded to the questionnaire tended to be older, highly educated, and either retired or in part time employment. There were slightly more females (53%) than males (46%). There was a wide age range among the volunteers, with a high proportion of older individuals (70% of respondents were over 50 years old). The volunteers also tended to be highly educated with 85% of volunteers having some form of tertiary education. The largest group of respondents were retired (47%), followed by those in paid employment for less than 30 h per week (21%) (Fig. 2).

Respondents had volunteered in CBC activities from a few months to over 40 years, with the highest proportion of respondents having volunteered between 1 and 5 years (41.9%), and the smallest proportion for 16–20 years (5.4%). There was also a range of volunteering frequency with the highest proportion of respondents volunteering more than once a week (34.6%) (Fig. 3).

Volunteer recruitment

Interviews with local CBCG representatives revealed that recruitment is a barrier to effective CBC:

> It's a big issue. I've had various attempts at getting the community involved with limited success, but because I'm so busy and the lack of interest I essentially gave up. (CBCG member)

> [We recruit volunteers] with difficulty, actually. It's very, very difficult. We promote it on our Facebook page. One of the issues I have had is that I always respond to volunteers offering to come but for whatever reason they then don't turn up. It's probably a 50% success rate of going out to the community and saying will you come and help? (CBCG leader)

There was typically a limited effort put into recruiting new volunteers and it tended to be left to interactions with current volunteers or through social media, as explained by two interviewees:

> It's word of mouth, people who know people. We do sometimes post on Facebook. (CBCG leader)

> They pretty much recruit themselves. We do posts every now and then on social media saying we want some extra volunteers, or people, word of mouth is handy. We basically just try to get our name out in the community. (CBCG employee)

> It's word of mouth, people who know people. Often people have become a bit lonely and would like to have some input, social interaction. (CBCG leader)

> Word of mouth or people see an article in the guardian or stumble across our website or have been dragged into some volunteering by a family member. We are really open to any group with an interest. (CBCG co-ordinator)

> We just use the Facebook page, it's all locals. Most people have been involved from quite early on. (CBCG leader)

Questionnaire respondents were asked 'How did you come to join your environmental group?'. The top types of recruitment were a social interaction with a volunteer (25%), a local advertisement (20%), having previous experience in CBC (16%), or seeing a need in their local community (16%) (Fig. 4). Of all the respondents 67% had brought another individual to their CBCG at least once and individuals who were brought along often attended multiple times, with 37% attending a few times, and 47% attending regularly.

Barriers to community-based conservation volunteering

When asked 'Are there any factors that make it difficult, or which limit your ability to volunteer?', 58% of questionnaire respondents stated that there are factors that sometimes make it difficult for them to volunteer. The most frequently mentioned factors were health issues, working and/or studying, family commitments and time constraints. Other barriers identified by some respondents included lack of funds, inability to keep up with technology, the negative impact of COVID-19, and the lack of non-physical options.

On a scale of 1–5 where 1 was not limiting and 5 was very limiting, respondents were asked to rate a series of barriers that were found to be common in the literature about CBC. Out of a range of common barriers, time taken ($\bar{x} = 2.87$ out of 5), travelling distance ($\bar{x} = 2.31$), and health issues ($\bar{x} = 2.07$) were identified as the most likely to limit respondent's participation in CBC (Table 1). However, no barriers were identified as being very limiting to respondent volunteering.

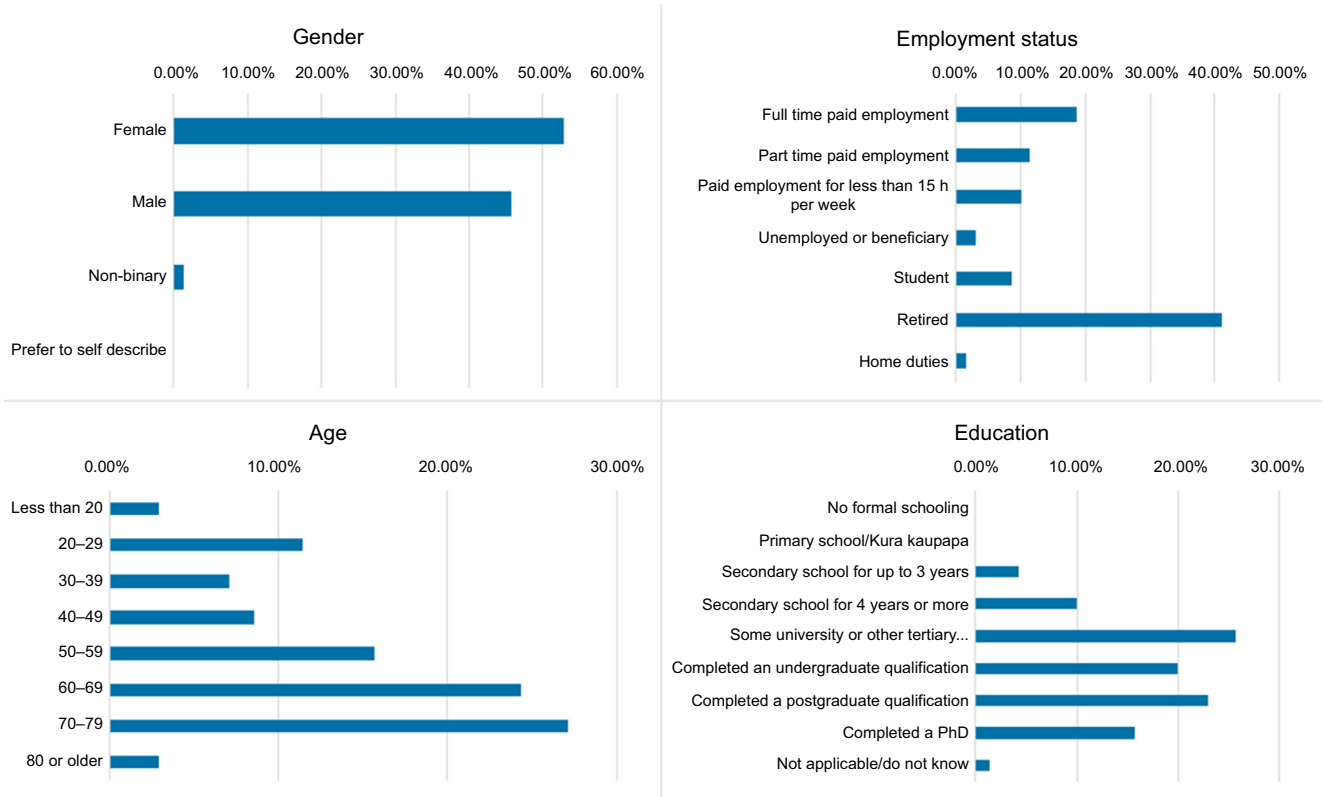

Fig. 2. The demographic characteristics of the questionnaire respondents ($N = 70$).

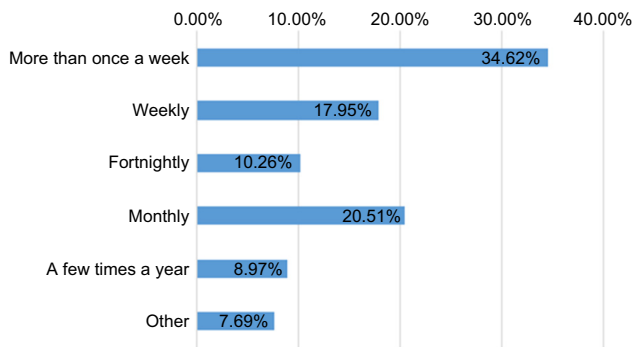

Fig. 3. How frequently questionnaire respondents volunteer ($N = 78$).

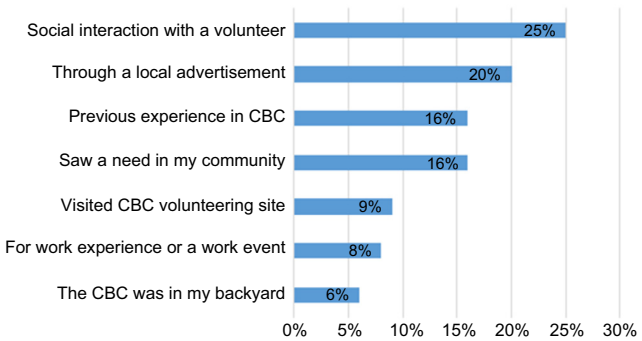

Fig. 4. Ways that questionnaire respondents were recruited to CBC volunteering ($N = 74$).

Time was also identified as a key barrier in interviews with CBCG leaders who reported often finding it difficult to get volunteers to commit their time to volunteering especially when volunteering sites were not local:

> It's super time consuming and when you don't have much spare time it's a big ask. (CBCG volunteer)

> Because people have to travel, its [[sic] far more drop in, drop out. People don't stick around and having to train people means there is too much admin for little return. (CBCG leader)

Table 1. Impact of a range of barriers on respondents volunteering in CBC, where 1 is not limiting and 5 is very limiting ($N = 82$).

Barrier to volunteering	Mean	s.d.	Variance
Time taken	2.87	1.48	2.2
Travelling distance	2.31	1.47	2.16
Health issues	2.07	1.35	1.81
Lack of resources	1.9	1.28	1.64
Lack of activity relevance	1.85	1.26	1.6
Lack of activity options	1.63	0.97	0.94

Improving volunteer retention

Questionnaire respondents were asked if there were any reasons that would cause them to stop volunteering for their CBCG. The most frequently mentioned reasons were future health issues or an inability to do the work, moving out of the area, needing to work more hours or getting a full-time job, conflict with other volunteers, and when they no longer can make a useful contribution. This was also reflected in answers from interviewees:

> Work got too busy, work clashes with time of working bee, one volunteer got injured on a tramp, and some moved out of the area. We are learning and we are improving the way we do things. (CBCG leader)

> Peoples' priorities in life change, they have families or different work commitments. (CBCG co-ordinator)

> They (volunteers) don't leave the group, they just hover in the background. (CBCG leader)

> Some (volunteers) have taken a back seat but we can call on them and we do when we need something. (CBCG trustee)

Forty-three percent of respondents knew of someone who had stopped volunteering for their CBCG. The perceived reasons for leaving were very similar to the respondent's reasons stated above and included getting a full-time job, moving out of the area, health issues or death, lack of appreciation, conflict with other volunteers, and frustration at lack of action from the local council.

Interviews with local CBCG representatives revealed that some groups deliberately ensure that they offer a range of tasks that allows older volunteers or volunteers with limited mobility to continue to volunteer:

> We split the jobs because there is so much to do. There's the visitor hosting side of things which is suitable for the people that aren't super mobile or physical and some people just like chatting to people out there. (CBCG employee)

> We have some older retired people who absolutely love coming in but can only do a few hours a month or they are off for a hip replacement or something like that, so they are away for months and then come back. (CBCG employee)

> We accept anyone for who they are, people know they can come and do as much as they are able to do and we will find a job that fits their ability. One lady used to be an active member of the planting side of things but as she has gotten older she can't do that so every month she organises the morning tea. (CBCG leader)

Other opportunities to improve volunteer retention that were raised by interviewees included:

> In order to get the most out of the time that the volunteers are with you, it's got to be prepared. Otherwise, people go away saying gosh that was a muddle or we didn't really achieve what we wanted to do. (CBCG leader)

> I try to give people choices so that if their uncomfortable about doing something there's another thing that they could do. (CBCG leader)

An issue that was mentioned by interviewees that was not addressed in the questionnaire was the need for funding to pay for co-ordinators, and the lack of leadership succession:

> I think the biggest challenge for most environmental groups is that it's easy to for us to get funding for plants or for traps. It's very hard to get co-ordinator time funded and a lot of our groups run on volunteer goodwill, when you get to a certain point, you can't expect volunteers to do that. It's got to be somebodies job. (CBCG co-ordinator)

> The pollution challenge got a grant and so we had a co-ordinator and that's a critical thing. I mean funding for a paid co-ordinator makes a big difference. (CBCG volunteer)

> The energy of one or two key people is critical, both of those women (a CBCG leader and co-ordinator) make real contributions to the community. Succession is a big issue with volunteer groups for sure. (CBCG volunteer)

Relationships between CBCGs, local council and other stakeholders

Interviews with local CBCG representatives revealed that there is a need for better communication and relationships, between local council and CBCGs:

> Volunteers will leave, because they think that their work wasn't recognised enough by council. Why do it, if it should be done by council? (CBCG trustee)

> They [the Council] should be facilitating and enabling the community to grow in conservation. (CBCG member)

Eighty-six percent of respondents stated that their CBCG liaises or collaborates with local and regional council, 4% said they do not, and 10% were unsure. Most respondents believed that collaboration with local and regional councils was important for the success of their group ($m = 4.29$ out of 5, where 1 is 'not important' and 5 is 'very important') (Table 2). However, only 19% of respondents thought that there were ways to improve collaboration. More communication, an increase in funding and grants that aligned with the needs

Table 2. The average perceived importance of collaboration with government agencies of respondents, where 1 is not important and 5 is very important ($N = 70$).

	Mean	s.d.	Variance
Local and regional council	4.29	1.14	1.29
Department of Conservation	3.97	1.29	1.65

of CBCGs, building personal relationships with councillors, hiring more competent people, and for councils to be willing and able to make more of an effort to help CBCGs were some of the ideas mentioned by respondents.

Fifty-seven percent of respondents identified that their CBCG liaises or collaborates with the DOC, 12% said they do not, and 32% were unsure. With respondents stating that collaboration was important ($m = 3.97$ out of 5) (Table 2). Only 14% of respondents thought something can be done to increase collaboration. Some ideas mentioned by respondents include better communication, more support programs, ensuring competent people are in charge, and for DOC to listen to CBCGs and allow them to have a say in decisions in the planning stage of local conservation initiatives.

Fifty-four percent of respondents stated that their CBCG liaises or collaborates with local iwi, 19% stated that their CBCG does not, and 26% were unsure. Only 17% of respondents believed that an increase in collaboration with iwi is possible; they mentioned that some ways collaboration could be improved included having more patience, time and understanding towards each other, having local iwi on board, and taking time to build relationships between iwi and CBCGs.

Community-based environmental monitoring

Questionnaire respondents were asked 'As far as you know does your environmental group/s carry out any sort of monitoring? If yes, what type of monitoring?'. Fifty-six percent of respondents stated that their CBCG carried out some form of monitoring. However, only 33% of respondents reported being personally involved in any monitoring. Respondents also displayed varying understandings of what monitoring involves, with some respondents stating that they observed but never took notes or collected any sort of data. The most frequently mentioned types of community-based environmental monitoring were recording the number of pests caught in traps, undertaking bird counts, monitoring plant survival rates, counting and classifying rubbish collected from streams, undertaking pest monitoring (e.g. using tracking tunnels), monitoring native bird recovery rates, undertaking water quality tests, and monitoring plant growth (Table 3). Overall respondents who were involved in community-based environmental monitoring found it enjoyable with an average of 3.91 out of 5 (where 1 is 'not enjoyable' and 5 is 'very enjoyable').

Table 3. Types of community-based environmental monitoring carried out by CBCGs in the Manawatū ($N = 78$).

Types of community-based environmental monitoring	Number of volunteers that stated they carry out each type of monitoring
Pest trapping	15
Bird counts	12
Plant survival rates	11
Pest monitoring	9
Rubbish collection	6
Bird health	6
Plant growth	5
Water quality	4
Plant numbers	3
Butterfly tagging	2
Succession of plants	1
Dune regression	1
Peat control	1
Bird survival rates	1
Soil testing	1
Total	78

Interviewees were also asked about environmental monitoring, and it was clear that many CBCGs were not involved in environmental monitoring and that there was a need for more CBCGs to get involved:

> Citizen science is not viewed highly at all. (CBCG employee)

> We need to be actively monitoring those trees that we put in. We want to be as sure as we can that we are achieving our aim, which is basically biodiversity. (CBCG leader)

> Green corridors could do so much more, in terms of monitoring, particularly in terms of the trees they plant. (CBCG volunteer)

Discussion

This section discusses the key barriers to effective CBC identified above: challenges associated with volunteer recruitment; barriers to volunteering and how they can be mitigated; building and maintaining relationships with stakeholders; and the importance of community-based environmental monitoring.

Volunteer recruitment

A key barrier to effective CBC is volunteer recruitment, due to the sometimes sporadic nature of volunteer participation. For many groups, high volunteer turnover means there is a need for ongoing recruitment of volunteers. New volunteers can

help to expand the efforts of the group, help reduce burn out by allowing volunteers to step back when needed, and therefore have a positive impact on the success of CBC (Forgie *et al.* 2001). This is not true for all CBCGs as it is common for CBCGs to have a committed core group of volunteers who maintain a successful CBCG without the need for additional volunteers. However, it is nonetheless important to understand what recruitment methods are the most likely to attract new volunteers (Bushway *et al.* 2011; Frensley *et al.* 2017; Ding and Schuett 2020; Thomas *et al.* 2021). The top recruitment method reported by our respondents was social interaction with an existing volunteer. However, it only accounted for a quarter of individuals and other methods also played a key role in recruiting volunteers. A study by Heimann and Medvecky (2022) found that just over 64% of their volunteers were recruited by a social interaction (either hearing about the opportunity through personal contacts, or being actively recruited by a member), rather than an advertisement. A study by Ding and Schuett (2020) had similar findings and stated that a personal request by a volunteer and a positive atmosphere for communication were key in recruiting new volunteers. Employing a variety of approaches to recruit volunteers would likely be beneficial for CBCGs in the Manawatū and elsewhere.

Volunteer recruitment and turnover is an issue for many environmental groups that rely on volunteers (Bushway *et al.* 2011; Asah and Blahna 2013; Higgins and Shackleton 2015; Frensley *et al.* 2017; Hvenegaard and Perkins 2019; Ding and Schuett 2020), with some studies finding that turnover is increased with higher proportions of older volunteers (Hvenegaard and Perkins 2019). For example, in a study by Hvenegaard and Perkins (2019) that looked at recruitment in volunteers who walked trails and maintained Bluebird nest boxes, only 18% had successfully recruited someone to take over their trail and 14% were not going to attempt to recruit another volunteer. CBCGs would benefit from having a succession plan in place for both volunteers and leaders, so that if volunteers do leave, there is someone to replace them. This is particularly important for predator trapping, as if traps are not cleared and reset regularly mammalian predators will re-inhabit the area. There are a range of factors that may hinder the ability of CBCGs to recruit new volunteers, and it is crucial that co-ordinators understand these barriers to volunteer participation so they can be mitigated (Bushway *et al.* 2011; Higgins and Shackleton 2015). Lack of time is a major barrier to volunteering in our study and other studies (Higgins and Shackleton 2015; Frensley *et al.* 2017; Hvenegaard and Perkins 2019), and there is often a conflict between family and work commitments and volunteering. In order for an individual to consider volunteering they must have enough energy and time to spare and be able to fit volunteering around other commitments. Volunteer expectations can also impact recruitment, as it is necessary to promote the positive side of volunteering to attract volunteers. However, it is also important that expectations are realistic so volunteers do not leave when they experience the mundane or negative aspects of volunteering (Measham and Barnett 2008; Kramer and Lewis 2020). Other individuals' views can also impact the ability to recruit volunteers, as close family and friends could be supportive and encourage volunteering or hinder and cast doubt on the matter (Kramer and Lewis 2020). In order to address these issues, it is important that communication with potential volunteers portrays volunteering work as a meaningful and purposeful experience and promotes flexibility in commitment and roles to work around other commitments (Hong and Morrow-Howell 2013; Kramer and Lewis 2020).

There are a variety of methods to help improve recruitment rates mentioned in the literature. Targeting specific demographic groups is identified as one way to bolster recruitment. A study by Ding and Schuett (2020) found that there is a peak in generative concern in middle age, and suggested that targeting middle aged and older individuals would increase recruitment rates. Targeting a specific age group means that recruitment methods can be delivered in a way that specifically attracts that demographic. Aligning volunteering tasks with volunteer motivations has also been identified by several studies to have a positive impact on recruitment, especially recruitment of individuals with diverse interests and backgrounds (Bushway *et al.* 2011; Higgins and Shackleton 2015; Frensley *et al.* 2017). Conservation initiatives that are intertwined with prominent issues in the community, and complement individual's interests and previous experiences can also help promote participation in CBC (Bonney *et al.* 2009; Frensley *et al.* 2017). One way of achieving this may be to work together with other local groups or an umbrella group (such as ENM) so that potential volunteers could be directed towards a group that matches their interests, skill set, availability, and motivations.

Barriers to community-based conservation volunteering

While volunteer recruitment is essential, it is even more desirable to retain current volunteers instead of constantly having to find and train new individuals. The most commonly mentioned barrier by CBC volunteers in the Manawatū was time, which consists of a few aspects including time taken to travel to the volunteering site, the time the volunteering tasks take, and the timing of working bees and events. Time has also been identified as a key barrier in a number of previous studies. Hvenegaard and Perkins (2019), Higgins and Shackleton (2015), and Frensley *et al.* (2017) all stated that time commitment was one of the top barriers to volunteering. A high proportion of volunteers in the Hvenegaard and Perkins (2019) study stated that time was a key barrier to commitment, and time was noted as a top reason for dropping out of the project in Frensley *et al.*'s (2017) study.

Managers of CBCGs can try to address this challenge by setting clear expected time frames, and by providing different options for involvement (Frensley *et al.* 2017), including options to volunteer at a variety of times, and to have volunteering opportunities that vary in length of time. With small CBCGs it may be worth working with other groups in order to be able to provide these options. If a volunteer site is some distance from a township, transport could be provided to encourage more volunteers to attend. Offering volunteers a variety of options in terms of when and duration that they can participate will allow volunteers who have limited time to still make a contribution, and may help reduce turnover rates (Hong and Morrow-Howell 2013; Higgins and Shackleton 2015; Frensley *et al.* 2017).

Health benefits to volunteers are frequently mentioned in the literature around environmental volunteering (O'Brien *et al.* 2010; Hobbs and White 2012; Zuo *et al.* 2016; Chen *et al.* 2022; Patrick *et al.* 2022). However, health issues are also a significant barrier especially given the high number of older volunteers. Given the high proportion of older volunteers, it was unsurprising that issues around health were often mentioned as a barrier to volunteering in CBCs in the Manawatū. A study by Hvenegaard and Perkins (2019) stated that poor mobility, getting older, and even death were mentioned by volunteers as reasons to stop volunteering. Another study by Pope (2005) also found that poor health was a barrier to environmental volunteering. Therefore, it is important that there are options in place to help individuals with health issues or declining health to continue to volunteer. CBCGs could encourage volunteering in individuals with health issues by being flexible in commitment levels (Hvenegaard and Perkins 2019), supporting volunteers reducing volunteering hours (Hvenegaard and Perkins 2019), offering a range of tasks that include non-physical options, and being aware of changes in volunteer motivations over time (Bramston *et al.* 2011; Frensley *et al.* 2017; Pagès *et al.* 2018; Schild 2018; Larson *et al.* 2020).

Several of the groups in the Manawatū already have a range of tasks that allows older or mobility limited people to continue to volunteer. If volunteers are supported and offered alternative tasks it means that they can still make a contribution and feel useful, and are therefore more likely to continue to volunteer. Being understanding of individual's situation and having a diverse group of volunteers would also be helpful in reducing the impact of individuals with health issues. If individuals needed to cut back on volunteering or change their role, other volunteers would be able to cover or swap tasks with them.

Simply using volunteers as a workforce is not enough to retain volunteers, leaders must be aware of volunteer motivations and take steps to prevent burnout and high turnover rates (Measham and Barnett 2008; Asah *et al.* 2014; Takase *et al.* 2019). Due to many CBCGs having a small number of volunteers, volunteers can often be overworked, have limited support, feel obligated to participate, and have limited training opportunities, leading to an increase in volunteers burning out and/or leaving (Frensley *et al.* 2017; Schild 2018; Takase *et al.* 2019; Ganzevoort and van den Born 2020). Just over 40% of respondents knew someone who had stopped volunteering; some of the top mentioned reasons were increasing hours at work, health issues, lack of appreciation, and the breakdown of relationships. Being aware of key reasons why people decide to stop volunteering can allow CBCG leaders and environmental agencies to mitigate this issues. For example, 'lack of appreciation' can be addressed by having an appreciation plan in place where each volunteer is individually thanked after volunteering either in person or via an email, or a thank you afternoon tea could be held a few times a year to thank all volunteers.

Like many CBCGs around the world, most of the CBCGs in the Manawatū are quite small and tend to be kept alive by one or two committed volunteers. While these individuals deserve to be recognised and applauded for all their hard work, they also need other volunteers to step in to give them regular breaks and additional volunteers with the knowledge and skills to take over when they want to take on a less committed role. The literature identifies several challenges around leadership succession in CBCGs (Froelich *et al.* 2011; Pagès *et al.* 2018; Li 2019). The succession of leaders is important, and has been identified as a reason why volunteer groups disband. CBCGs need to be able to anticipate and manage the succession of leaders by having a plan in place to effectively prepare for leadership transition and development (Froelich *et al.* 2011; Li 2019). In order for leaders to have the ability to take the time to support volunteers and make them feel satisfied, they also need to be supported and have volunteers that can assume leadership roles as required. Future leaders can be recruited from within or outside of a CBCG, and depending on the size of the group, it may be the responsibility of the current leader, management, or board members to recruit a future leader (Johnson 2022). Time and effort must be put into developing or finding future leaders. One way of achieving this is for current leaders to empower prospective leaders by listening to their needs and working alongside them as role models (Froelich *et al.* 2011; Johnson 2022). Smaller CBCGs often do not have the capacity to train new leaders and therefore will recruit outsiders to fill a gap in leadership (Johnson 2022). Another way to reduce the impact of leadership succession is to have multiple leaders who work together, to achieve group goals, and train volunteers (Froelich *et al.* 2011; Johnson 2022). It is key that there is open dialogue between current leaders, prospective leaders, and management to ensure a smooth transition (Johnson 2022).

Relationships between CBCGs, local council, and other stakeholders

Multiple groups are involved in conservation in Aotearoa New Zealand, including local residents, iwi, NGOs, and

government organisations (Forgie *et al.* 2001; Wilson 2005; Peters *et al.* 2015*b*). Relationships between these groups are important, as CBCGs often rely on other groups and organisations for funding, technical support, and education. These groups often have differing views of conservation, and incorporating multiple perspectives can impact the success of conservation initiatives (Forgie *et al.* 2001).

Local councils play an important supporting role to CBC, by facilitating increased cooperation and communication between CBCGs, and providing practical guidance and financial support. Horizons Regional Council's stated goal is to 'work in partnership with our communities to protect and enhance our patch of native New Zealand', by working alongside communities to empower them to reconnect with, protect and enhance native areas including the Manawatū Gorge, Manawatū River and Totara Reserve (Horizons Regional Council 2024*a*). They offer a range of environmental education opportunities that aim to increase environmental knowledge and awareness of environmental issues, with the goal of fostering behaviours' and actions that lead to positive environmental change (Horizons Regional Council 2024*b*). Horizons also offers yearly funding for local community projects with environmental goals (Horizons Regional Council 2024*a*). The Palmerston North City Council (PNCC) 'plays its part in regenerating biodiversity within its rohe[4] by re-establishing bush, particularly along walkways; controlling introduced predators; working in partnership with iwi; supporting community efforts' this is made possible by partnering with iwi and supporting CBCGs (Palmerston North City Council 2018, 2021). Our findings suggest PNCC has been successful in building relationships with CBCGs as the majority of local CBCGs (86%) have some form of collaboration with PNCC. These relationships and partnerships have allowed PNCC to further suppress pests, increase riparian plantings at stream margins, plant native trees to attract birdlife into the city, enhance freshwater ecosystems, and protect more habitats of local significance. PNCC plan to incorporate Māori knowledge into council practice and ensure that iwi have a primary role in environment decision-making, and strengthen Māori involvement in conservation efforts (Palmerston North City Council 2018, 2021). However, there is still a need for better communication and relationships with CBCGS and local council. In order to strengthen the relationship between council and CBCGs, it is important that council have well-paid and properly trained staff in place to help CBCGs and that CBCGs are able to play a meaningful role in the initial decision making around local conservation initiatives and projects. A positive example of the council working closely with the community is the PNCC working alongside ENM to distribute funding via the Environmental Initiatives Fund that provides local CBCGs with access to funding to carry out local conservation goals and in turn improve environmental outcomes in the Manawatū.

DOC is responsible for conserving Aotearoa New Zealand's natural and historic heritage (Department of Conservation 2023). DOC has an integrated ecosystem management framework for CBCGs that allows for coordination between different natural resource management agencies, and local communities across entire ecosystems. The key features of this type of management framework include: managing ecosystems as a whole; integrating legislative requirements of a range of natural resource management agencies; encouraging collaboration between government agencies, iwi and local communities; and having adaptive approaches that can change depending on social, economic and cultural issues (Department of Conservation and Ministry for the Environment 2000; Forgie *et al.* 2001). Our research suggests that although in principle DOC promotes and supports collaboration with CBCGs, there is limited practical support for CBC in the Manawatū, with just over half of the CBCGs in the Manawatū collaborating with DOC. Our research also pinpoints some key aspects that would improve communication between DOC and CBCGs, which includes allowing CBCGs to have more of a say in local conservation initiatives, increasing support and training programs, and having more on the ground technical support. There was also a desire from CBCG representatives to have more qualified people looking after CBCGs and their volunteers. Forgie *et al.* (2001) argue that in order to get communities involved in solving environmental issues, there needs to be a change in local communities' attitudes and behaviour. A collaborative approach that allows government agencies to act as stakeholders, creating a framework that encourages participation, and supporting and empowering CBC initiatives, allows communities to come together to decide values, goals and strategies for themselves meaning they are more likely to be committed to the cause. Addressing complex environmental issues is dependent on changing peoples' attitudes and behaviours in order to promote active engagement. Therefore, moving power away from government agencies allows communities to play a critical role in decision making and leads to communities becoming highly invested in positive environmental outcomes (Forgie *et al.* 2001).

The degree to which CBCGs in the Manawatū collaborate with iwi was found to be variable. This reflects the findings of a previous study by Peters *et al.* (2015*b*), which found that only 41% of CBCGs had received cultural advice from iwi, and 22.3% of CBCGs wanted an increase in cultural advice by iwi. They also found that there was limited on-ground involvement in CBCGs by iwi with only 4.4% of groups having iwi contribute to on-ground work. However, it is important to note that many iwi have their own CBCGs that they operate on top of their obligations to manage a range of conservation decisions within their jurisdiction and their many other roles and responsibilities.

[4]Rohe is the Maori word for boundary, district, region, territory, area, border (of land) (Moorfield 2024).

Iwi are crucial partners for many CBCGs and it is important that conservation projects take traditional knowledge and cultural values into account, and consider environmental issues that are relevant to Māori (Forgie *et al.* 2001). Walker *et al.* (2024) found that Māori were more likely to attend whānau[5], marae[6], and tribal restoration events than events run by councils or other forms of restoration events. They conclude that cultural and community connection are important drivers for participation in CBC events, but found that these drivers are often under recognised.

An increased recognition of the importance of cultural and community connection and the common interests of Māori and the wider community would help to promote partnerships between CBCGs and iwi by encouraging collaboration to address local conservation issues, and work together sharing the responsibility of managing local conservation areas (Roberts *et al.* 1995; Taiepa *et al.* 1997; Forgie *et al.* 2001).

Community-based environmental monitoring

Only a small proportion of New Zealand CBCGs carry out community-based environmental monitoring where they collect data around changes in ecosystem health, and species abundance and distribution (Peters *et al.* 2015*a*, 2016). Community-based environmental monitoring has been found to be constrained by the availability of willing volunteers, the scientific literacy of volunteers, and the need for some help with technical aspects (Peters *et al.* 2016). Some of the easier forms of monitoring tend to be more commonly carried out, including 5-min bird calls, and photo points (Peters *et al.* 2016). Five-min bird calls were one of the top forms of community-based environmental monitoring in Manawatū CBCGs, along with other simple monitoring including pest trapping and tunnels, rubbish collection, plant survival and growth, and water quality tests. Public awareness of a decline in freshwater health means that there tends to be an increased interest in water quality monitoring in CBCGs (Hughey *et al.* 2013; Peters *et al.* 2016). This is also the case in Manawatū CBCGs where there is a focus on the Manawatū river and its catchment. Another aspect of community-based environmental monitoring, which is common among New Zealand CBCGs, is bird monitoring (Parker 2008; Peters *et al.* 2016), bird counts, and health monitoring with these activities being also common within CBCGs in the Manawatū.

In order to achieve their conservation goals, many of CBCGs in Aotearoa New Zealand rely on funding from project partners that can include, government resource management agencies, NGOs, science organisations, iwi, and local businesses (Hardie-Boys 2010; Jones and McNamara 2014; Peters *et al.* 2015*a*, 2015*b*, 2016; Sullivan and Molles 2016). These project partners often require evidence of successful conservation outcomes. To obtain this evidence, CBCGs often need to carry out some form of monitoring to receive further funding (Jones and Kirk 2018). In previous studies, it was found that most data collected by CBCGs was used to help guide their environmental projects, and that their data was often aligned with the requirements of funders for applications and reporting back (Peters *et al.* 2015*a*, 2015*b*, 2016). Yet, it was also found that there is often no comprehensive planning or milestones to demonstrate successfulness or progress (Peters *et al.* 2015*a*; Galbraith *et al.* 2016). Sullivan and Molles (2016) argued that having planned community-based environmental monitoring for CBCGs would improve future projects and increase the likelihood of funding, as many funding agencies require proof of success. A high proportion of the CBCGs in the Manawatū carry out limited or no community-based environmental monitoring. Therefore, it would be beneficial to many of the CBCGs to carry out planned community-based environmental monitoring to track success and increase the chances of receiving funding for future conservation goals.

An increased awareness of the need for broader and longer term monitoring in Aotearoa New Zealand means there is a reliance on CBCGs to contribute to local, regional, and national conservation goals (Lee *et al.* 2005; Peters *et al.* 2015*a*; Sullivan and Molles 2016). CBCGs are able to collect more data than government agencies alone and can therefore supplement data collection (Peters *et al.* 2015*a*). Community-based environmental monitoring has been shown to improve ecological knowledge within a community, and encourage relationships between CBCG members, project partners and the wider community. However, research also suggests that in order for this to happen CBCG volunteers need increased support from government agencies to increase their ability to monitor their own projects (Peters *et al.* 2015*b*). In order to further increase community-based environmental monitoring, DOC and local councils have a critical role to play to ensure that CBCGs have the knowledge and skills to carry out conservation activities and environmental monitoring (Department of Conservation and Ministry for the Environment 2000); this could be achieved by an increase in training courses and education around local conservation issues. Without considerable advice and technical support, community-based environmental monitoring can be challenging for CBCGs to undertake effectively (Galbraith *et al.* 2016). Increasing community-based environmental monitoring has the potential to have a positive impact on both conservation goals and volunteer participation. Community-based environmental monitoring could be a constructive alternative for volunteers that are not physically able to participate in the more

[5]Whānau is the Māori word for extended family, family group, a familiar term of address to a number of people – the primary economic unit of traditional Māori society (Moorfield 2024).

[6]Marae is the Māori word for courtyard – the open area in front of the wharenui, where formal greetings and discussions take place. Often also used to include the complex of buildings around the marae (Moorfield 2024).

strenuous activities typically undertaken by CBCGs, and may provide a stimulating task for volunteers that are motivated by learning and prefer to avoid tasks that are repetitive and mundane such as weeding and planting. Another benefit of incorporating community-based environmental monitoring could be to attract another demographic of volunteers, such as secondary or tertiary science students for whom contributing to community-based environmental monitoring could provide a mutually beneficial opportunity.

Conclusion

This study examines the barriers to effective CBC and contributes to the understanding of the challenges associated with CBC volunteering, and the impact that volunteer motivations have on the continued participation of volunteers. In order for CBCGs to be successful, they must be able to recruit and retain volunteers. Our study suggests that social interaction is the most productive way to recruit new volunteers, while highlighting the value in utilising a variety of recruitment methods. While volunteer recruitment is crucial to growth, it is even more important to retain current volunteers. In order to achieve this, CBCG leaders and partners such as local councils and the DOC need to consider barriers to volunteering in the planning stages of conservation projects and programs. The two main barriers we found were time constraints and declining health. Some ways CBCG leaders and management can help mitigate these barriers includes clearly communicating time commitments ahead of time, being flexible and offering volunteers a range of commitment levels, providing a range of tasks (including non-physical options), supporting volunteers to change commitment levels, and attempting to recruit a diverse group of volunteers to reduce the impact of age-related health issues on volunteer retention. CBCGs should also encourage their volunteers to build relationships with each other, in order to reduce conflicts and volunteer dissatisfaction.

Building connections with local councils, NGOs, iwi, and other CBCGs is also important as they provide crucial support to help ensure successful and effective CBC. A collaborative approach creates a framework that encourages participation by supporting and empowering CBCGs, allows communities to work together on conservation initiatives, and can increase volunteer commitment (Forgie *et al.* 2001). There is also a need for increased recognition of the importance of Māori culture and interests to help promote collaboration with local iwi within CBC (Roberts *et al.* 1995; Taiepa *et al.* 1997; Forgie *et al.* 2001).

It was found that although some CBCGs carry out some monitoring including monitoring pest trapping and tunnels, rubbish collection, plant survival and growth, and water quality tests, in general, community-based environmental monitoring is currently limited in the Manawatū. It is important that local councils and the DOC encourage and support community-based environmental monitoring to provide the evidence of successful conservation outcomes that are needed to obtain and maintain funding, and to contribute to understanding and enhancing local and regional conservation outcomes. In order to increase community-based environmental monitoring, CBCGs need additional support from local and central government, including education, training programs and on the ground technical support to develop the knowledge and skills to carry out reliable community-based environmental monitoring. There is also scope for further networking and collaboration between CBCGs within and between regions to learn from each other and leverage the collective expertise of experienced volunteers and employees.

Supplementary material

Supplementary material is available online.

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