

From Exposure to Impact:

**Effects of Conservation Volunteering on Connection
with Nature and Pro-Environmental Behavior**

A Case Study from Iceland

Olga Horn

Master Thesis Series in Environmental Studies and Sustainability Science,
No 2013:029

A thesis submitted in partial fulfillment of the requirements of Lund University
International Master's Programme in Environmental Studies and Sustainability Science
(30hp/credits)



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by

Olga Horn

olga.horn.87@gmail.com

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Submitted August 12, 2013

Supervisor: Melissa Hansen, LUCID, Lund University

Abstract

Environmental volunteering in Iceland was taken as a case study to investigate whether taking part in an extended conservation volunteering project has the potential to increase participants' connection with nature and motivate them to act in a more environmentally-friendly way. Drawing from theories of behavior change and the human-nature relationship a mixed-methods approach was applied. Levels of Nature Relatedness (NR) and Pro-Environmental Behavior (PEB) were generated from 49 former and 21 prospective volunteers and compared using descriptive statistics. In addition, self-reported change data was examined and supplemented with qualitative accounts derived from interviews and the survey. While the comparative approach yielded mixed results, the qualitative findings suggest that the participation in an extended volunteering project is indeed able to influence nature connectedness through an increased familiarity and PEB through an increase in awareness and concern as well as reflection. Wider implications of the findings are discussed.

Keywords: conservation volunteering, nature experience, nature relatedness, connection with nature, pro-environmental behavior, human-nature relationship,

Acknowledgements

A lot of people contributed to the completion of this thesis, either directly or indirectly, and I owe them many thanks. Firstly, I would like to thank my supervisor Melissa who provided me with a lot of guidance during this long and bumpy process. Thank you also to Henner, David, Kim, Maggie, Marina, Ruta, Stefan, Molly, and everyone else that helped me with their valuable inputs in terms of statistical guidance, suggestions for improvement and proof-reading. Thank you to all my fellow Lumesians that I was able to share this two-year journey with, most notably the Smålands crew. Thank you to all my family and friends for being there for me.

This thesis would not have been possible without the great support from the two volunteer programs! Especially a big thank you to the two volunteer coordinators that helped me distribute the surveys. Finally, a big thank you to all of the former and prospective volunteers that took the time to fill out my surveys and to share their Iceland experiences with me. It was great and inspiring to listen to your stories and relive some of the beautiful moments I had during my own ICV experience in 2011.

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List of Abbreviations

BTCV	British Trust for Conservation Volunteers
ICV	Iceland Conservation Volunteer

IFS	Iceland's Forest Service
NR	Nature Relatedness
PEB	Pro-Environmental Behaviour
TPB	Theory of Planned Behaviour
UST	Umhverfisstofnun (Environment Agency of Iceland)
VBN	Value-Belief-Norm Model
WMV	Wilderness Management Volunteer

1. Introduction

Climate change, biodiversity loss, natural resource depletion and pollution represent just a few of the many environmental problems we are facing today. While innovative technologies and efficiency gains are often heralded as the means to solving these issues, behavior change has received comparatively less attention (Bell, Greene, Fisher, & Baum, 2005). However, since environmental degradation is largely due to human activity, there is a necessity to create concerned citizens that actively seek to minimize their negative impact on the environment.

Strategies to encourage the adoption of 'green' behaviors often focus on the provision of information. In their communication campaigns environmental NGOs and agencies try to convince citizens to eat organic food by educating them about the negative impact of chemical fertilizers. They use facts and figures to portray the connection between car use, smog levels and adverse health effects. They call for action to sign a petition or plant a tree by raising awareness about the rapid rate of deforestation. However, as the following proverb indicates, information does not always automatically result in action.

*Said is not yet heard,
Heard is not yet understood,
Understood is not yet approved,
Approved is not yet applied.*

In fact, most people identify themselves as environmentally-aware and conscious, yet fail to comply with their values and beliefs in practice, a phenomenon called the value-action gap. Faced with this realization, what can trigger individuals to behave in a more sustainable manner? Guiney & Oberhauser (2009) argue that "in order to live responsibly with nature, people need to understand, love, and feel part of the natural world" (p. 192). Indeed, an increase in individual's relatedness to nature may be able to bridge the gap between values and action (Nisbet, Zelenski & Murphy, 2009). The underlying rationale is that if a person feels connected to the environment, he or she will care about it and commit to protecting it (e.g. Schultz, 2000; Cheng & Monroe, 2012).

In our modern world, however, people live their lives increasingly separate from the natural world. Indeed, according to Evans & McCoy (1998) we spend about 90% of our time inside. Nature is more and more often encountered either indirectly or vicariously through the use of technology. The decline of direct contact has led to a human alienation from the natural world and hence to a society that lacks concern about environmental issues with adverse implications for our planet (e.g. Schultz,

2002; Pyle, 2003; Bratman, Hamilton & Daly, 2012). The challenge thus is to reconnect humans to nature.

Direct experiences may be the solution as has been proposed by several researchers. For example, Wells and Lekies (2006) found that childhood nature activities had a significant positive effect on adult environmental attitudes and behaviors – especially the interaction with ‘wild’ nature as opposed to ‘domesticated’ nature which only affected attitudes but did not translate into pro-environmental behaviour. The notion that nature experiences are important for the formation of environmental concern is further supported by Dunlap and Heffernan (1975). Thereby, appreciative outdoor activities such as hiking and camping were found to have a stronger association than consumptive (e.g. hunting) ones (Dunlap & Heffernan, 1975).

Going back to nature, living and working outside, may hence provide an opportunity to close the physical and psychological divide between humans and nature. Conservation volunteering is one form of actively engaging with Mother Earth. Next to its direct benefits in terms of nature conservation it may also have the capacity to influence volunteers to become more connected to nature and to act more environmentally-friendly in their every-day lives by offering a space to interact with nature, to reflect about one’s life and to experience a different lifestyle. Conservation volunteering in Iceland was taken as a case study to investigate these assumptions.

In the following, the concrete research objectives and research questions will be presented followed by a review of the dominant theories pertaining to pro-environmental behaviour change and the human-nature relationship (chapter 2). Chapter 3 introduces the two conservation volunteering projects in Iceland that were chosen as a case study thereby pointing out their potential to bring about change in volunteers’ lives. Chapter 4 continues with a detailed description of the methodology encompassing both quantitative and qualitative means of collecting data. The results are presented in chapter 5 and discussed in chapter 6.

1.1. Research Objectives and Research Questions

There are three objectives to this thesis: The first one is to find out whether a hands-on conservation volunteering experience can reinforce individuals’ connection to nature. The second one is to explore the potential of such an experience to shift individuals’ behavior to a more environmentally-friendly one. Lastly, this thesis seeks to explore the link between nature connectedness and pro-environmental behavior. Two long-term conservation volunteering programmes in Iceland were used as an exploratory case study to answer the following three research questions:

- **RQ1.** Does the participation in an extended conservation volunteering project increase connection with nature?
- **RQ2.** Does the participation in an extended conservation volunteering project increase pro-environmental behavior?
- **RQ3.** Is there a causal relationship between connection with nature and pro-environmental behavior?

2. Theoretical Framework

2.1. Pro-Environmental Behavior Change

Pro-environmental behavior is defined as “behavior that harms the environment as little as possible, or even benefits the environment” (Steg & Vlek, 2009). Recycling, ride-sharing, buying organic food and reusing products represent only a few examples of how people can consciously minimize their negative impact.

Numerous frameworks have been developed and tested to explain why people act environmentally-friendly and what potential barriers exist. Early on it was assumed that information was the key to creating environmental stewards. Citizens simply needed to be educated about the environmental problems certain human behaviors cause. As a result, they would form environmental attitudes which would automatically lead to the adoption of environmentally-friendly behaviors (Burgess et al., 1998, as cited in Kollmuss & Agyeman, 2002).

In reality, however, conservation knowledge has been found to be merely weakly related to PEB (Bechtel & Churchman, 2002). Human behavior is much more complex and often influenced by other

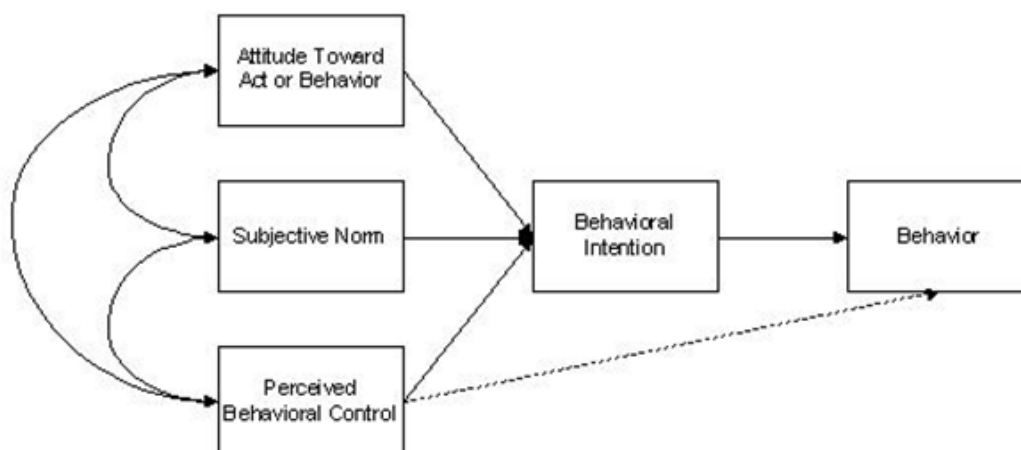


Figure 1. Ajzen's Theory of Planned Behavior (Source: Ajzen, 1991)

factors (Kaiser, Hübner & Bogner, 2005). According to the researchers Fliegenschnee & Schelakovsky (as cited in Kollmuss & Agyeman, 2002) 80% of the time environmental behavior is determined by situational and other internal influences such as economic constraints, time requirements, social pressure and habitual behavior (Steg & Vlek, 2009). By taking into account not only an individual's attitude towards a specific behavior but also perceived behavioral control and subjective norms, Ajzen's (1991) theory of planned behavior (TPB) offers a more comprehensive explanatory model of an individual's decision-making process (Clayton & Myers, 2009). These three components are assumed to directly influence behavioral intention which in turn is considered to be the immediate antecedent of actual behavior as can be seen in figure 1 (Ajzen, 1991). Since TPB is "grounded in self-interest-based and rational choice-based deliberation" (Kaiser, Hübner & Bogner, 2006, p. 2151), it is better at explaining behavior that is difficult to engage in.

TPB, however, does not explicitly take moral and other altruistic considerations into account which are thought to be crucial for understanding pro-environmental behavior according to the value-belief-norm model (VBN) (Stern et al., 1999, as cited in Kaiser, Hübner & Bogner, 2006). Figure 2 shows the causal chain of elements that leads to behavior. Personal values, especially the altruistic ones, influence one's more concrete beliefs about human-nature relations (NEP). These in turn affect one's beliefs about the consequences of environmental change for valued things (AC) and one's perceived ability and responsibility to act (AR) (Stern, 2000). The higher one's awareness of consequences and ascription of responsibility, the stronger one's pro-environmental personal norms will be. Indeed, personal moral norms, i.e. one's sense of obligation to take corrective action, have been found to be the ultimate predictor of different types of pro-environmental behavior (Clayton & Myers, 2009).

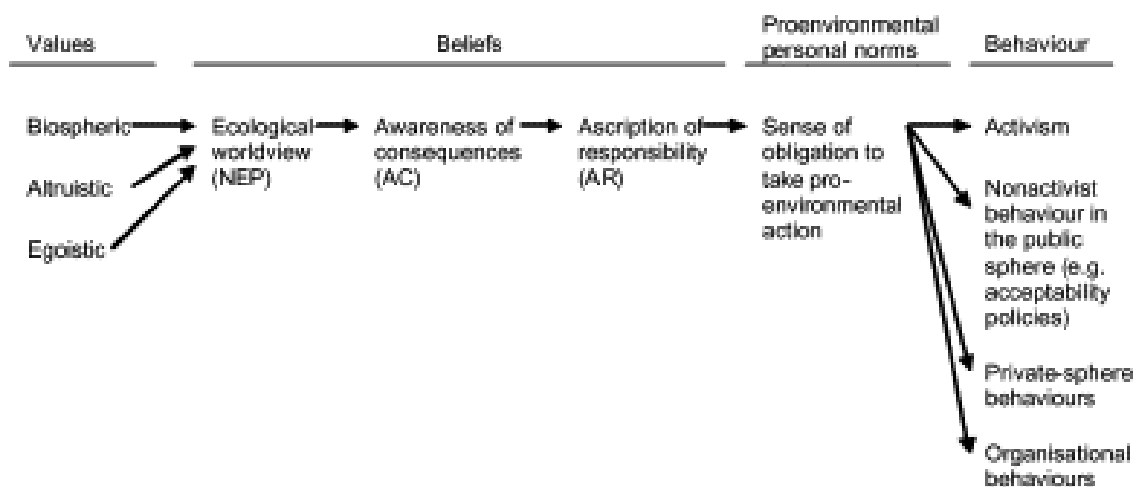


Figure 2. VBN theory of environmentalism (Source: Steg, Dreijerink & Abrahamse, 2005, adapted from Stern, 2000)

Compared to the TPB, the VBN has less explanatory power in settings characterised by high behavioral costs or other constraints, mainly since it does not take into account perceived behavioral control and non-environmental motivations (Steg & Vlek, 2009). When it comes to low-cost pro-environmental behavior, however, VBN has been found to explain behavior considerably better than other value-based models (Kaiser, Hübner & Bogner, 2006).

Often overlooked in the literature on PEB is the fact that old behavior patterns constitute a very strong barrier to behavioral change (Kollmuss & Agyeman, 2002). Indeed, instead of making reasoned choices, behavior is often habitual. According to Steg & Vlek (2009) these “habits are reconsidered only when the context changes significantly” (p. 312). At the same time behavior needs to be practiced in order to become a habit (Kollmuss & Agyeman, 2002).

Moreover, theories of emotion and affect are relevant when trying to understand the motivations behind conservation behavior¹. In the past, the role of positive and negative emotions in shaping PEB has often been neglected for more rational and cognitive structures such as Ajzen’s TPB (Bechtel & Churchman, 2002). However, since PEB is altruistic, Smith, Haugtvedt and Petty (1994) argue that affective influences are likely to be more significant in predicting behavior than attitude measures that are based on cognition, i.e. rational deliberations. This hypothesis has been backed up by various other researchers. For example, Berenguer (2007) found out that an increase in empathic emotions such as warmth, sympathy and compassion had a reinforcing impact on students’ willingness to donate money to environmental NGOs and on their perceived obligation to protect nature. Similarly, Kals, Schumacher and Montada’s study (1999) established a link between both positive and negative emotions and respondents’ willingness to commit to behaviors. In this case, the two types of emotions were love for nature on the one hand and resentment about others’ pollution behavior on the other hand.

Hence, the closer our “emotional affinity toward nature” (Kals, Schumacher & Montada, 1999, p. 180), the more our beliefs, values and attitudes are shaped by our relationship with nature and the more will we want to protect it by acting in a pro-environmental manner (Kollmuss & Agyeman, 2002). With this in mind, it is necessary to establish where our connection with nature originates and how it can be nourished, both of which will be explained in the next section.

¹ The terms pro-environmental behavior and conservation behavior are used interchangeably in this study.

2.2. The Human-Nature Relationship

Several theories exist about the root causes of our relationship with nature ranging from theories based on evolution and inherited tendencies to those focusing on experiences and developmental factors.

For example, the biophilia hypothesis developed by sociobiologist E. O. Wilson (1984) posits that humans have an inborn need to take interest in the natural world and, more importantly, to affiliate with it. According to the author this is due to the fact that personal well-being largely depends on the relationship with one's surrounding nature. Indeed, research has shown that nature is associated with various health benefits: "improved mood, enhanced concentration and self-discipline, and a general reduction in stress" (Clayton & Myers, 2009, p. 86) are some of the positive nature-induced psychological processes listed by the Health Council of the Netherlands. Reflection and an enhanced self-knowledge are further benefits that have been identified (Clayton & Myers, 2009). More specifically, Clayton and Myers (2009) argue that the degree of stimulation provided by certain natural environments coupled with the relative absence of social constraints may present individuals with the time and space needed to think about themselves as well as their goals, values and priorities in life.

Still, to date there is only little evidence that supports Wilson's claim that it is our genetic predispositions that make us seek out natural environments (Clayton & Myers, 2009; Kals, Schumacher and Montada, 1999). Indeed, the degree to which a person is drawn to nature seems to vary greatly from one individual to another. While some people feel very strongly about nature satisfying their innate attraction to it by participating in outdoor wilderness activities, visiting a zoo or gardening, others seem to remain relatively unmoved, even disconnected (Nisbet, Zelenski & Murphy, 2009). This is likely due to the fact that people spend more and more time indoors interacting with media and technology instead of the natural world (Mayer & Frantz, 2004). This trend backs up the case for experiences underlying the human-nature relationship as opposed to genetics (Kals, Schumacher & Montada, 1999).

Thereby, especially experiences during one's early years seem to be crucial. Studying environmentalists' sources of motivation to protect nature, Chawla (1998) identified childhood to be the starting point for their connection with the environment. Positive experiences with nature and family members that acted as role models for respecting nature were given as the main reasons (Chawla, 1998). Moreover, a special outdoors place as well as personally observing environmental degradation may instigate one's affection for nature (Clayton & Myers, 2009). While a lot of the research focuses on childhood and adolescence, the human-nature relationship can also be nurtured

during adulthood (Clayton & Myers, 2009). Again, personal experiences are key. Clayton and Myers (2009) believe that it is important to accumulate “a wider range of experiences – extending over time and/or throughout different aspects of one’s life – in order to maintain a strong environmental identity” (pp. 58f)². Correspondingly, Vining, Merrick and Price’s (2008) data on people’s perception of their relationship with nature suggests that the more time one spends in nature, the more one feels connected to it. Mayer and Frantz (2004) made the same observation, as did Kals, Schumacher and Montada (1999) who showed that past and present frequency of outdoor experiences serve as predictors of one’s interest and emotional affinity in nature. Moreover, different experiences may have different effects: While interest can be triggered by negative as well as positive nature encounters, affinity requires positive experiences (Kals, Schumacher and Montada, 1999). All of these results provide evidence for the notion that the human-nature relationship is not pre-determined but depends on one’s level of interaction with the natural world as well as on the type of experience.

Returning to the link between nature connectedness, attitudes and pro-environmental behavior that was mentioned before, various studies have been conducted to investigate it. For example, Schultz and Zelezny (1998) undertook a five-country survey to examine the relationship and found their nature-specific measure of connectedness to be a better predictor of PEB than a general one. This result was applicable to all of the five countries (Schultz & Zelezny, 1998). Similarly, Hoot and Friedmann’s (2011) study revealed that Mayer and Frantz’ (2004) Connectedness to Nature Scale correlated significantly with ecological behavior. Even in cases where other potential influences on behavior change were studied did nature connectedness emerge as an important factor: In her Master’s thesis on the effects of a voluntary active learning experience on PEB, Melin (2012) found a “correlation between developing a stronger connection to nature and pro-environmental behavior change” (p. 42). Melin (2012) hence reasons that spending time outdoors may greatly enhance both the learning outcomes as well as PEB through an increased connectedness to nature.

As research shows, experiences in nature have the potential to strengthen our relationship to the natural world which in turn may make us behave more environmentally-friendly. In Melin’s (2012) example it was WWOOFing³, i.e. volunteering on organic farms, which brought people closer to nature and made them act more responsibly. Hine, Peacock and Pretty (2008) looked at another type of volunteering, namely conservation volunteering and also established that “participating in conservation volunteering activities not only reconnects people to nature but also positively

² The term environmental identity refers to an “identity of oneself as connected to or interdependent with nature” (Clayton & Myers, 2009, p. 209).

³ WWOOF stands for World Wide Opportunities on Organic Farms, an international organization that facilitates volunteering on organic farms (Melin, 2012).

influences the environmental attitudes and behaviors of individuals” (p. 42). Thereby, quantitative data from BTCV⁴ Cymru⁵ volunteers who were engaged in ‘their’ natural spaces in Wales was evaluated.

As these two studies exemplify, volunteering in natural spaces may provide individuals with an opportunity to intensify their connection with nature. At the same time, it may leave an impact on their private sphere by turning their lifestyles into more sustainable ones. With the theories on behavior change and the human-nature relationship in mind, conservation volunteering in Iceland was taken as a case study to explore these claims.

3. Case Study: Conservation Volunteering in Iceland

There are several reasons that motivated my choice to use conservation volunteering in Iceland as a case study, most importantly my familiarity with it. In the summer of 2011 I was a so-called Iceland Conservation Volunteer (ICV) myself, living and working in some of the most beautiful and remote areas of the country for 11 weeks. I thus have an inside-view and know from my own experience that the participation in such a project can affect one’s connection to nature as well as one’s lifestyle. At the same time personal contacts to fellow ICVs and the Environment Agency of Iceland (UST⁶) enabled me to gain easier access to potential participants. Second of all, a lot of the literature on conservation volunteering focuses on people’s motivations and their contribution (e.g. *Measham & Barnett, 2008; Grimm & Needham, 2012*), but not so much on the impact of the experience on the volunteers themselves. And if so, this is mainly assessed within an educational framework (e.g. student volunteering and work-based learning), i.e. where programmes are specifically designed to increase participants’ environmental awareness.

In the following sections two projects will be introduced and described in detail, namely UST’s ICV trail team and the Thórsmörk wilderness management team (WMV) that are run by Iceland’s Forest Service (IFS).

⁴ BTCV stands for the British Trust for Conservation Volunteers. Since May 2012 the organization is known under the trading name The Conservation Volunteers (*TCV, n.d.*). However, for the sake of simplicity the organization will be referred to as BTCV in this thesis.

⁵ BTCV Cymru is the organization’s local chapter in Wales.

⁶ The Icelandic name of Iceland’s Environment Agency is Umhverfisstofnun, hence the abbreviation UST.

3.1. ICV Trail Teams

For over 35 years international volunteers have been engaged in nature conservation in Iceland's protected areas. What started off with a group of 15 volunteers from BTCV has now grown into a comprehensive conservation programme: Iceland's Environment Agency welcomes around 200 volunteers yearly. Most of them are short-term volunteers taking part in either one of the scheduled two-week holiday groups⁷ or as part of an occasional volunteer service group (e.g. college groups) (*Umhverfisstofnun, n.d.*). The centre piece of UST's activities, however, is the long-term programme which was established in 2004/2005 (*C. Goemans, personal communication, April 12, 2013*). Each year between 16 and 20⁸ Iceland Conservation Volunteers are recruited by the organization to spend 11 weeks (May/June – August) living and working in the country's national parks and nature reserves. After an initial 10-day training programme in trail maintenance and path design, the volunteers are divided into four⁹ ICV trail teams (*Umhverfisstofnun, n.d.*). Each of the teams is then ready to work in any protected area on any practical conservation task (*C. Goemans, personal communication, April 12, 2013*). The tasks are diverse mainly focusing on construction and repair work on bridges, trails and drains but also encompassing wilderness restoration work such as invasive species removal, GPS mapping and moss-transplanting (*Umhverfisstofnun, n.d.*). The teams which usually consist of four volunteers and a team leader spend up to two weeks in each location, occasionally working together with local staff or other volunteer groups.

Work sites differ greatly from well-visited tourist spots with public facilities to remote wilderness areas without access to running water and electricity. Hence, living conditions can be very basic and challenging especially due to Iceland's unpredictable weather. Volunteers mostly stay in tents close to the work sites. They cook their own meals and share all domestic duties (*Umhverfisstofnun, 2013*).

Volunteers come from all over the world. However, due to UST's close connection with BTCV¹⁰ a lot of them are British. This was especially the case in the early years of the programme but has since developed to a more 'international' project.

⁷ Holiday groups are organized by external partners like TCV and WorkingAbroad (*Umhverfisstofnun, n.d.*).

⁸ In the first year of the programme only one team was recruited and for several years there had only been two years (*C. Goemans, personal communication, April 12, 2013*). 2011 presented a peak year with a total of eight teams, i.e. around 35 volunteers. Thereafter, the project was downsized due to budget cuts, thus the final number of four teams (*C. Goemans, personal communication, April 12, 2013*).

⁹ In 2011 only, two groups were recruited not as Trail Teams but as Wilderness Management Teams with a special focus on wilderness restoration work. However, for the sake of simplicity, no distinction will be made between the two in this thesis.

¹⁰ In fact, UST's previous volunteer coordinator who majorly shaped the programme is of British descent and was previously engaged with BTCV.

The long-term programme has enabled UST to become more flexible and efficient in their conservation work as well as more selective in the selection process. Although prior knowledge in nature conservation is not a prerequisite¹¹, volunteers need to be able to cope with the basic living conditions and need to enjoy team work as well as the practical and often quite strenuous tasks (C. Goemans, personal communication, April 12, 2013). As opposed to the short-term volunteers, ICV trail team volunteers do not have to pay a fee to participate. Instead, they work in exchange for food, ‘accommodation’¹² and transport during the project. This has enabled UST to focus more on the nature conservation aspect: While short-term volunteers often view their placement as a conservation holiday, thus having higher expectations concerning organized recreation, long-term volunteers are expected to work five days a week from 9 am till 6 pm and to plan their weekends themselves (C. Goemans, personal communication, April 12, 2013). After a successful completion of the 11 weeks, participants are offered to join the programme in consecutive years for a shorter period of time, usually for two or four weeks.

3.2. Thórsmörk Wilderness Management Teams

The Thórsmörk trail volunteer programme is coordinated by Iceland's Forest Service and organized in partnership with UST. It was set up to help maintain the hiking trails in Thórsmörk and Goðaland, a mountainous region situated three hours South-East of Iceland’s capital Reykjavik. Among the several opportunities to get involved is also the newly-established wilderness management project which was developed by UST’s former volunteer coordinator and which will have its first 16 volunteers participate this summer (2013). The two projects are hence quite similar in terms of structure, work and target group. For example, wilderness management volunteers also undergo an introduction into practical nature conservation before they work on specific projects and they also come from all over the world. Differences are presented in table 1 and are more pronounced when it comes to project length and location: The IFS projects run for six weeks only and are all located in either Thórsmörk or Goðaland (Thórsmörk Trail Volunteers, 2013).

Table 1. Main differences between the ICV Trail Teams and the Thórsmörk Wilderness Management Teams

	ICV Trail Team	Thórsmörk Wilderness Management Team
Organizer	Iceland’s Environment Agency (UST)	Iceland’s Forest Service (IFS)

¹¹ The only requirement is that applicants are over the age of 20 (Umhverfisstofnun, 2013).

¹² However, participants need to bring their own equipment (incl. their own tent) and cover the costs for transport to and from the 11-week programme and their insurance (Umhverfisstofnun, 2013).

Length	11 weeks (incl. an introduction phase and one holiday week)	6 weeks (incl. an introduction phase and one holiday week)
Location	e.g. Vatnsfjörður Nature Reserve, Snæfellsjökull National Park, Skaftafell, Jökulsárgljúfur, Lónsöræfi Nature Reserve, Laki Craters, Fjallabak Nature Reserve	Thórsmörk & Goðaland
Tasks	mainly: trail maintenance; wilderness restoration work; trail mapping	mainly: trail maintenance; trail mapping; erosion control

Both the 11-week UST projects and the 6-week IFS projects provide volunteers with a unique opportunity to spend an extended time living and working in and for nature. Thereby, participants are challenged to cope with a minimalist and basic lifestyle, being completely removed from urbanized areas and the social and technical constraints and aspects of ‘modern life’. Hence, the two projects were chosen to explore whether an extended conservation volunteering experience is able to strengthen the human-nature relationship and whether it can induce pro-environmental behavior change.

4. Methodology

4.1. Research Method

The UST and IFS projects were used as a case study. They were deemed appropriate for such an analysis due to their unique characteristics and context: length, outdoor experience, small group size, contribution to environmental work, etc.

Both quantitative and qualitative research methods were employed to find answers to the research questions as can be seen in table 2. Being the “most obvious way to measure moods, thoughts, attitudes and behavior” (Bell et al., 2005, p. 14), a self-reported measures approach was applied, i.e. participants were asked to report on their own feelings and behaviors. More specifically, two different surveys assessing nature relatedness (NR) and pro-environmental behavior (PEB) were distributed to former ICVs on the one hand and to prospective ICVs and WMVs on the other hand. The quantitative data was further complemented with insights from semi-structured interviews that were conducted with participants from both groups.

Table 2. Mixed-methods approach used to answer the research questions

Research Question	Quantitative		Qualitative	
RQ1. experience → NR	<ul style="list-style-type: none"> • Comparison of NR scores • Evaluation of self-reported change regarding NR 	<ul style="list-style-type: none"> • Questions 9 and 10 in Appendix A • Question 11 in Appendix A 	<ul style="list-style-type: none"> • Evaluation of survey comments • Evaluation of interviews 	<ul style="list-style-type: none"> • Question 11 in Appendix A • Interview data
RQ2. experience → PEB	<ul style="list-style-type: none"> • Comparison of PEB scores • Comparison of individual PEBs • Evaluation of self-reported change regarding PEB 	<ul style="list-style-type: none"> • Questions 12 and 13 in Appendix A • Questions 12 and 13 in Appendix A • Question 14 in Appendix A 	<ul style="list-style-type: none"> • Evaluation of survey comments • Evaluation of interviews 	<ul style="list-style-type: none"> • Question 14 in Appendix A • Interview data
RQ3. NR ↔ PEB	<ul style="list-style-type: none"> • Correlation analysis between NR and PEB-scores 	<ul style="list-style-type: none"> • Questions 9, 10, 12 and 13 in Appendix A 	<ul style="list-style-type: none"> • Evaluation of interviews 	<ul style="list-style-type: none"> • Interview data

Several reasons lead to the choice of this mixed methods approach. The validity and reliability of case studies usually benefits from the application of multiple methods (Yin, 2009). Due to the complexity and ‘fuzziness’ of NR, PEB, their relationship and antecedents, it was clear that quantitative data would not be able to capture the full picture. Hence, interview data was used to help explain and illustrate the concepts and their connections meaning that the two methods were conducted in a sequential explanatory manner (Creswell, 2003). Furthermore, the survey was used to gain easier access to potential interview participants (Bryman, 2008). The resulting availability of certain background information facilitated the sampling process to a great extent.

4.2. Participant Recruitment

To see whether the participation in a long-term conservation volunteering project is able to leave an impact on volunteers in terms of nature connectedness and behavior, a ‘before-after’-comparison was undertaken. Since the scope of this thesis did not allow for a direct comparison of pre- and post-experience levels of NR and PEB of the same sample of volunteers, the values and responses of prospective ICVs and WMVs were compared to those of former ICVs. How the two samples were recruited will be presented next.

4.2.1. Former ICVs

Since Umhverfisstofnun (UST) does not maintain a database of ICV alumni, the social networking service facebook was used as primary tool to find participants. The online survey link was posted and promoted on the official Iceland Conservation Volunteers facebook page¹³. Additionally, members of the closed Iceland Conservation Volunteers Group¹⁴ were invited to an event which asked them to fill out the survey. Lastly, fellow ICV team members and leaders that I had met during my time in Iceland were personally asked to fill out and share the survey. The whole process was highly facilitated by the cooperation with UST and most importantly the current volunteer coordinator.

The last page of the online survey included a question on whether respondents would be willing to have an in-depth conversation about their ICV experience.

4.2.2. Prospective ICVs & WMVs

With the recruitment processes for 2013 already being finished, the programme coordinators of the two projects were able to send out the survey link to all of the prospective volunteers via e-mail.

As with the other survey, the last page contained a question on whether respondents would be willing to talk about their upcoming volunteering experience.

4.3. Survey Design

Two surveys were set up – one aimed at former ICVs and a shorter one for prospective ICVs and WMVs. The online survey software tool SurveyGizmo was used so as to facilitate the response process thus enabling a higher rate of return. Both surveys assessed respondents' motivations for taking part in the two long-term programmes, their connection with nature as well as pro-environmental behavior. The survey targeted at former ICVs additionally included questions on their satisfaction with the programme and the perceived impact of the project on themselves in terms of nature relatedness and pro-environmental behavior change. The two versions can be found in Appendix A and B respectively. The following sections will provide more detailed information on the various components and how they were examined.

¹³ The facebook page can be accessed via: <http://www.facebook.com/ICV.is?ref=ts&fref=ts>

¹⁴ The facebook group can be accessed via: <http://www.facebook.com/groups/IcelandVols/>

4.3.1. Connection with Nature & Change

4.3.1.1. Scoring Criteria: Nature Relatedness

In order to assess respondents' connection with nature, the Nature Relatedness Scale by Nisbet, Zelenski & Murphy (2009) was used. It was selected over Mayer and Frantz (2004) Connection to Nature scale as it does not only capture the cognitive and affective dimensions of an individual's relationship with the natural world but also the physical component, a key aspect of NR and especially evident in those actively seeking out experiences in nature. The scale has been found to have a good internal consistency, thus making it a reliable construct (Nisbet, Zelenski & Murphy, 2009).

Overall, NR measures "one's appreciation for and understanding of our interconnectedness with all other living things on the earth" (Nisbet, Zelenski & Murphy, 2009, p. 718). The 21-item self-report measure can be broken down into three sub-scales, namely NR-Self, NR-Perspective and NR-Experience. Table 3 below provides an overview of the three sub-measures.

Table 3. Definition and examples of the three sub-scales

	NR-Self	NR-Perspective	NR-Experience
Definition	Internalized identification with nature	External, nature-related worldview	Familiarity with nature and the desire to experience it
Example 1	<i>My relationship to nature is an important part of who I am.</i>	<i>Nothing I do will change problems in other places on the planet. (reversed)</i>	<i>I take notice of wildlife wherever I am.</i>
Example 2	<i>I always think about how my actions affect the environment</i>	<i>Conservation is unnecessary because nature is strong enough to recover from any human impact. (reversed)</i>	<i>My ideal vacation spot would be a remote, wilderness area.</i>

Respondents were asked to state to which extent they agree with each of the 21 statements, with answer options ranging from "strongly disagree" to "strongly agree". Eight items were reverse-score items requiring respondents to consider their answer choices instead of simply agreeing with all the statements.

The scale was included in both surveys in order to be able to compare NR scores of those that have already completed the 11-week ICV programme with those that have been chosen to participate in the ICV and Thórsörk programmes this summer. Although NR is understood to be 'trait-like', i.e., to be relatively fixed across situations and over time, it is still assumed that experiences in nature have the potential to increase NR (Nisbet, Zelenski & Murphy, 2009; Vining, Merrick & Price, 2008).

4.3.1.2. Self-reported Change

In addition to the scale, ICV alumni were asked to indicate to which extent they felt a greater appreciation for and connection with nature as a result of their ICV experience with options ranging from 'no change' to 'a very great extent'. A comment box allowed for additional remarks.

4.3.2. Pro-Environmental Behavior & Change

4.3.2.1. Scoring Criteria: Pro-Environmental Behavior

In both surveys, respondents were asked to indicate how often they performed certain resource and lifestyle options and practices in their everyday lives. Items were chosen to cover various domains and scales encompassing no-cost actions, inexpensive ones as well as some that require more effort. More specifically, waste behaviors, shopping and food choices, transport actions, domestic water and energy use, ecosystem behaviors and engagement in debates and protests were assessed. The full range of items can be seen in table 4 with most of them being taken from Defra's framework for pro-environmental behaviors (Defra, 2008).

The response options participants could choose from were 'never', 'occasionally', 'most of the time' and 'always'. A 'not applicable'-option was included as well.

Table 4. List of 18 items of pro-environmental behaviour

Pro-environmental behaviors	
Waste recycle my waste compost organic waste reuse or repair items instead of throwing them away bring my own bag for shopping	Domestic Water & Energy Use save water by taking shorter showers turn off tap while brushing teeth turn off or unplug appliances when not in use
Shopping & Food Choices buy products with less packaging eat vegetarian/vegan buy organic and/or locally-grown food buy environmentally-friendly products	Ecosystem Behaviors make my garden/outdoor space attractive to wildlife put food out for birds/hedgehogs/foxes, etc.
Transport Actions walk, bike or use public transport for shorter trips share a car journey with someone else	Debates & Protest take part in demonstrations about environmental issues vote for a party/candidate that supports environmental protection engage in debates about environmental issues

4.3.2.2. Self-reported Change

As with nature relatedness, former ICVs were asked to state whether they believed that their experience in Iceland had an influence on any of the 18 behaviors. The four response choices ranged from 'no, not at all' to 'to a great extent'. Moreover, respondents were able to leave a comment.

4.4. Interview Process

As explained above, interviews were conducted to gain a more comprehensive understanding of the research variables and their connections by providing in-depth insights on the thoughts, attitudes and actions of the interviewees (*Harris & Brown, 2010*).

Almost all interviews were held via the voice-over-IP service Skype or telephone. In one occasion it was possible to meet in person. Interviews were first conducted with former volunteers and then with prospective volunteers. This approach enabled me to find out which perceived changes took place and provided a baseline to compare prospective volunteers NR and PEB to. Both former and prospective volunteers were interviewed in a semi-structured way. As opposed to the structured interview, only a few open-ended questions are asked in a semi-structured one. Instead, participant replies are probed and followed up on in order to get more detailed answers (*Harris & Brown, 2010*). How participants were sampled and which types of questions were posed differed between former and prospective volunteers.

4.4.1. Former ICVs

Interviewees were selected so as to best represent the total population but also to capture the differences between volunteers whose main activity before their experience was nature-related and those volunteers whose education or profession was not. After some initial background questions, participants were asked about their motivation to join the ICV programme and probed about their experience. Most importantly, I wanted to know what they particularly enjoyed about the project but also whether there were any aspects that they liked less. To assess any potential impacts that the project might have had on them, respondents were asked whether they had perceived a change in themselves in terms of their environmental attitudes, their connection to the natural world and their lifestyle.

4.4.2. Prospective ICVs and WMVs

Concerning the sampling process of prospective ICVs and WMVs, all of those that were willing to participate in an in-depth conversation were contacted so as to maximize the actual number of interviews. Here again, I started with questions about their background and motivation before inquiring about their expectations. To get a feeling for their relationship to the natural environment, I asked general questions, for example about the amount of time spent outdoors, their connection as well as about their environmental awareness and concern. Their level of pro-environmental behavior

was assessed by inquiring about certain behaviors. Thereby, I mainly focused on the actions that former ICVs had adopted or increased due to their conservation volunteering experience.

4.5. Analytical Approach

Due to sample size limitations¹⁵, the quantitative data was analysed in a descriptive manner. Microsoft Excel was used to compare, interpret and present the survey results with respect to connection with nature and pro-environmental behavior. Overall, differences between prospective and former volunteers’ results were deemed valuable if they were more than or equal to ten percentage points. Furthermore, the relationship between connection with nature and pro-environmental behavior was measured by applying a correlation analysis. The different approaches are explained in more detail in the following sub-sections.

4.5.1. Connection with Nature

Since total NR and NR sub-scales were analysed using descriptive statistics, a different scoring method from the one suggested by Nisbet, Zelenski & Murphy (2009) was applied: For each item¹⁶, respondents received either -2 (strongly disagree), -1 (disagree), 0 (neither disagree nor agree), 1 (agree) or 2 (strongly agree) points meaning that final scores for NR ranged from -42 to 42. NR was labelled as either low, medium low, medium high or high (table 5). Thereby, the cut-off points were determined on the basis of the prospective volunteers’ individual scores¹⁷. More specifically, the highest value of the lowest-scoring 20% was used to set the ‘low’ cut-off point, the lowest value of the highest-scoring 20% was used as the ‘high’ cut-off point with the remaining values being ‘cut in half’ to determine the medium low and medium high categories. The same approach was applied to categorize the NR sub-scales, all of which can be seen in table 5.

Table 5. Categorization of NR-scales

Scale	# of Items	Total Range	Low	Medium-low	Medium-high	High
NR	21	-42 - 42	<14	14 - 19	20 - 32	>32
NR-Self	8	-16 - 16	<4	4 - 6	7 - 11	>11

¹⁵ Most importantly, the sample sizes are too low to use inferential statistics. E.g. with an estimated population of 90 former volunteers, the sample size needs to be equal to 73 to be able to derive any statistically significant results (Krejcie & Morgan, 1970). Moreover, the two samples differ largely in size (49 versus 21).

¹⁶ That is, after reverse-score items had been adjusted for.

¹⁷ The reason for choosing prospective volunteers’ results as opposed to former volunteer’s results is that they are assumed to present the ‘baseline’ for this research, i.e. the status quo.

NR-Perspective	7	-14 - 14	<4	4 - 6	7 - 9	>9
NR-Experience	6	-12 - 12	<6	6 - 8	9 - 10	>10

4.5.2. Pro-environmental Behavior

Participants received between 0 ('never') and 3 ('always') points for each behavior meaning that a maximum final score of 54 could be achieved. Final scores were adjusted in order to account for cases where the 'not applicable' option was chosen. More specifically, they were normalized. Based on these outcomes, each participant's pro-environmental behavior was classified either as low, medium low, medium high or as high (table 6). Again, cut-off points were determined the same way as for the NR-scores, i.e. by taking prospective volunteers' scores as a baseline.

Table 6. Categorization of PEB

Scale	# of Items	Total Range	Low	Medium-low	Medium-high	High
PEB	18	0 - 54	<25	26 - 30	31 - 35	>35

Furthermore, the frequencies of how often each of the 18 behaviors is performed were compared between the two groups. Thereby, responses were grouped from a 4-point scale into two bar graphs, one comparing the response choices 'always' and 'most of the time' and another one covering the response options 'occasionally' and 'never'. The behaviors were analysed on a category-basis. This was deemed more appropriate as it allowed ignoring the 'not applicable' cases.

4.5.3. Relationship between Connection with Nature and Pro-environmental Behavior

Participants' final NR and PEB-scores were correlated using the data analysis function of Excel. To test the significance of the correlation a one-sided¹⁸ test was conducted.

4.6. Research Limitations

It is acknowledged that this study faces various research limitations, some of which were known about before the study was conducted and some of which became apparent afterwards.

Prior to sending out the surveys it was assumed that the 11-week programme had existed for longer and that each year had at least 16 volunteers. In brief, a larger sample of former ICVs was expected.

¹⁸ A one-sided test was chosen as theory suggests that the relationship between connection with nature and pro-environmental behavior is positive (see chapter 2.2.).

This would have allowed for a more representative data set and more elaborate analysis of the results.

With respect to the research design, a longitudinal cohort study would have been ideal. In a cohort study the researcher examines a group of people, all of which have a certain characteristic in common, over time. Since the same people are studied, variations due to cultural or generational differences can be precluded, thus allowing the observation of changes and their causal influences more accurately (Bryman, 2008). However, since the project takes place over summer, and the time frame for this thesis is limited, this was not possible. Indeed, due to the “time and cost involved, it is a relatively little-used design in social research” (Bryman, 2008, p. 49).

Concerning the selection of participants, a sampling and response bias is likely due to the fact that the ICV alumni survey was disseminated via facebook. Hence, only former volunteers that were part of either the facebook group or the facebook page knew about and had access to the questionnaire. It can be assumed that people decide to join the group and like the page only if they have an affiliation towards the programme. On the other hand, however, it is doubtful that former ICVs had completed the full 11 weeks if they had not enjoyed it. Another selection bias might have occurred because of the fact that most of the former ICVs that I contacted personally had participated in the programme in 2011 and 2012 which partly explains why a lot of the respondents completed the project in either of those two years. As mentioned before though, the size of the programme had considerably grown over time with 2011 presenting a peak year.

Self-reporting was used to evaluate and compare former and prospective volunteers' level of PEB in both the surveys and the interviews. However, the validity of self-reported conservation behavior as a measure for actual behavior remains problematic. Especially when it comes to actions that are highly influenced by social norms such as recycling, respondents have been found to systematically overestimate the extent to which they carry out the behavior (Bechtel & Churchman, 2002). This phenomenon can be explained by the so-called social desirability effect where respondents seek to appear more environmentally-friendly and conscious than they are (Bryman, 2008). Bechtel & Churchman (2002) suggest collecting data on actual behavior in order to account for this discrepancy. However, due to the dispersion of volunteers all over the world this was neither logistically, nor financially possible.

Since both the surveys and the interviews were in English, but only half of the participants were native speakers, language barriers cannot be ruled out. The NR-scale, for example, constitutes concepts that might be difficult to fully understand such as: “My connection to nature and the environment is a part of my spirituality” (Nisbet, Zelenski & Murphy, 2009, p. 724). Here, the term

spirituality might hold different connotations depending on one’s cultural context. A certain language barrier was also apparent in one of the interviews. However, since English is the official language of the project and since most of the participants hold a university degree, it can be assumed that overall proficiency in English is rather high.

5. Results

In this section the quantitative as well as qualitative results are presented. First of all, the two samples of volunteers are described, mainly in terms of their demographics and background. Next, the NR results are compared between the two samples to see if there are any noticeable differences. This is followed by a presentation of former volunteers’ self-reported levels of change in nature connection and appreciation which is complemented with personal accounts from the comments section as well as the interviews. The same is done with respect to PEB – the scores are compared and self-reported change levels and interviewees’ narratives are presented. Lastly, the correlation between NR and PEB is shown.

5.1. Participant Demographics

5.1.1. Former ICVs

49 completed surveys from former ICVs were received. Considering a total population size of about 85 to 90 volunteers, this represents a response rate of around 55% (C. Goemans, personal communication, April 22, 2013). Table 7 provides an overview of the respondents’ demographic data. Almost half of the respondents come from the UK which is not surprising taking into account the roots of the project and its strong connection to the British organization BTCV. Most of the other participants come from other European countries with only 6 respondents having a non-European background. Concerning the age distribution, about half of the participants were between 20 and 24 years old when they took part in the project and another 40% between 25 and 29 years of age. Since this is

Table 7. Demographics of former ICVs

Gender	
Female	59%
Male	41%
Age	
20 – 24	48%
25 – 29	40%
> 30	12%
Origin	
Europe	88%
North America	4%
Asia	4%
Oceania	4%
Education	
Bachelor Degree	57%
Master Degree	31%
Vocational School	6%
Other	4%
High School	2%

in line with the estimated average age of 23 - 25 it can be assumed that the sample offers a good representation of the total population (C. Goemans, personal communication, April 22, 2013). Also in line with previous assumptions, most of the respondents had been dealing with the natural environment before their ICV experience: More than two-third had been engaged in other nature conservation or environmentally-related activities. With respect to the volunteers' educational and professional backgrounds slightly more than 75% indicated that they were related to the natural environment. In fact only 14% of the sample, i.e. 7 out of 49, had neither been dealing with the

Table 8. Statistics of former ICVs

Year	
2012	25%
2011	29%
2010	16%
2009	14%
2008	6%
< 2008	10%
Role	
Volunteer	69%
Team Leader	31%
Returning Volunteer	
Yes	37%
No	63%
Motivation	
To travel around the country	88%
Interest in nature conservation	86%
To spend time in nature	76%
To care for the environment	71%
To challenge myself	63%
To learn new skills	52%
To get a break from my everyday life	51%
To meet like-minded people	49%
To improve my physical and/or mental well-being	27%

environment on a full-time nor on an extra-curricular level before they became ICVs.

As can be seen in table 8, more than half of the respondents participated in the project in the past two years with most of them in 2011. Knowing that 2011 presented a peak year in terms of the number of volunteers accepted to the programme, the distribution seems exemplary (C. Goemans, personal communication, April 12, 2013). Over two-third of the participants took part in the programme as regular volunteers. The rest completed the project as team leaders – in several cases as part of a placement within the European Voluntary Service framework.

Former ICVs had different and usually multiple reasons for joining the project. When asked to indicate their greatest motivation, an interest in

nature conservation (39%) emerged as the most important factor. This was followed by a desire to travel around the country (23%) and to get a break from everyday life (14%). An overwhelming 84% indicated that their most important goal was achieved to a great extent during their conservation volunteering experience. Considering their overall experience, 83% emphasized that they felt very positive about it with the rest feeling at least positive about it. The voluntary comments section at the end of the survey yielded several enthusiastic statements such as: *It was the best experience I've ever had so far, just loved it!* Words such as great, amazing and best featured in a lot of the comments. The high level of satisfaction is also reflected in the percentage of returning volunteers: More than one-third has come back a second or multiple times to do conservation volunteering in

Iceland. In addition, 14% reported that they had become engaged in other nature conservation or environmentally-related activities after their return.

Of the 48 respondents 85% were willing to be interviewed about their ICV experience. In total seven volunteers were interviewed. Interviewees came from four different countries with the youngest being 22 years old and the oldest one 35 years.

5.1.2. Prospective ICVs and WMVs

A total of 21 surveys were received – 10 were filled out by prospective ICVs and 11 by participants in the Thórsmörk programme. In terms of demographics, the sample of prospective volunteers is relatively similar to the sample of former ICVs, especially with respect to gender distribution and geographic background. Again, almost half of the respondents come from the UK. Less than 30% are between 20 and 24 years of age with almost 60% being between 25 and 29 years old. Hence, compared to the sample of former ICVs, prospective volunteers are older which is also reflected in the overall higher level of education as can be seen in table 9. Two-thirds of the respondents' current main activity involves the environment and over 80% have been engaged in related activities. Only one respondent answered 'no' to both questions.

Table 9. Demographics of prospective ICVs & WMVs

Gender	
Female	57%
Male	43%
Age	
20 – 24	29%
25 – 29	57%
> 30	14%
Origin	
Europe	90%
North America	5%
Asia	5%
Education	
Master Degree	52%
Bachelor Degree	38%
Other	10%

Table 10. Statistics of prospective ICVs & WMVs

Role	
Volunteer	86%
Team Leader	14%
Motivation	
To learn new skills	90%
Interest in nature conservation	86%
To spend time in nature	81%
To travel around the country	76%
To meet like-minded people	71%
To care for the environment	67%
To get a break from my everyday life	67%
To challenge myself	57%
To improve my physical and/or mental well-being	52%

Almost all of the respondents will partake in the programmes as volunteers; only three will be team leaders (table 10). Looking at their motivation, over 40% indicated that spending time in nature was the most important factor for them – an aspect that only 6% of former volunteers found to be most important. An interest in nature conservation and the desire to learn new skills follow with 19% each. The fact that travelling around the country is only viewed as most important for one respondent (5%) can

likely be attributed to the fact that over half of the respondents' volunteering experience will be geographically limited to the Thórsmörk area.

Lastly, out of the two-thirds that were willing to have an in-depth interview, contact was successfully established to three prospective volunteers aged between 25 and 28, all of which have a different nationality.

5.2. Connection with Nature & Change

5.2.1. Nature Relatedness

Figure 3 below illustrates the distribution of prospective (red) and former (blue) volunteers according to their NR scores. While 19% of future ICVs and WMVs exhibit a high level of NR, a lower percentage of ICV alumni do so. However, the difference lies at only seven percentage points. Looking at the medium-high score instead, 57% of former volunteers versus one-third of future volunteers ended up in this category. Taken together this means that 69% of all former ICVs have a medium-high or high level of NR which is 17 percentage points more than for the prospective volunteers. Moreover, only 6% of them had a low score as opposed to one-fourth of the future ICVs and WMVs.

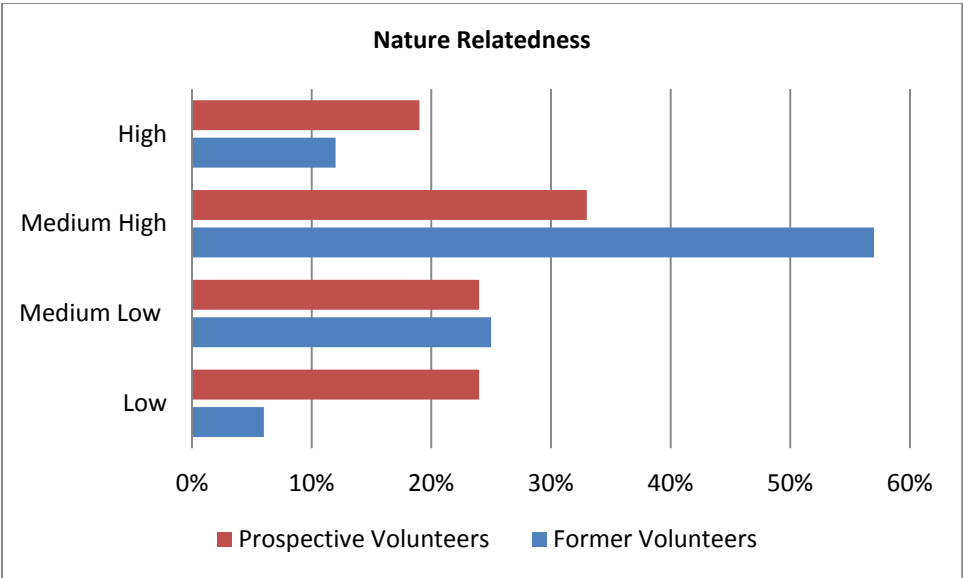


Figure 3. Percentage of prospective and former volunteers with a high, medium-high, medium-low and low level of Nature Relatedness

5.2.1.1. NR-Self

When looking at NR-Self the difference between high scores becomes more pronounced: 23% of prospective volunteers versus only 10% of former volunteers attained a high NR-Self score. Taking medium-high into consideration as well brings the percentage of high and medium-high scoring ICV alumni up to 61% compared to 47% of future ICVs and WMVs (figure 4). Again, the share of low-

scoring prospective volunteers is considerably higher than for the former volunteers: 29% versus 14% - a difference of 15 percentage points.

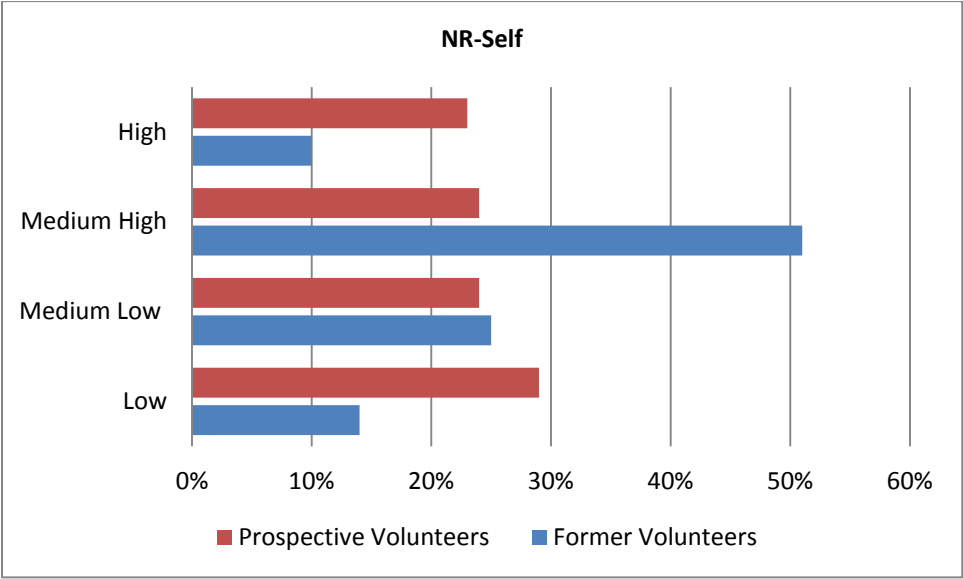


Figure 4. Percentage of prospective and former volunteers with a high, medium-high, medium-low and low level of NR-Self

5.2.1.2. NR-Perspective

The difference between the two groups’ respective high scores for NR-Perspective is negligible: 19% versus 18% (figure 5). The medium-high results, however, are far more distinct with a 22 percentage point divide in favour of the ICV alumni (55%). That is, almost three-fourths of former ICVs attained an either medium-high or high level of NR-Perspective as compared to only about half of all the prospective volunteers. Compared to NR and NR-Self, however, more former volunteers ended up with a low score (21%) which in this case exceeds the value of the future volunteers by two percentage points.

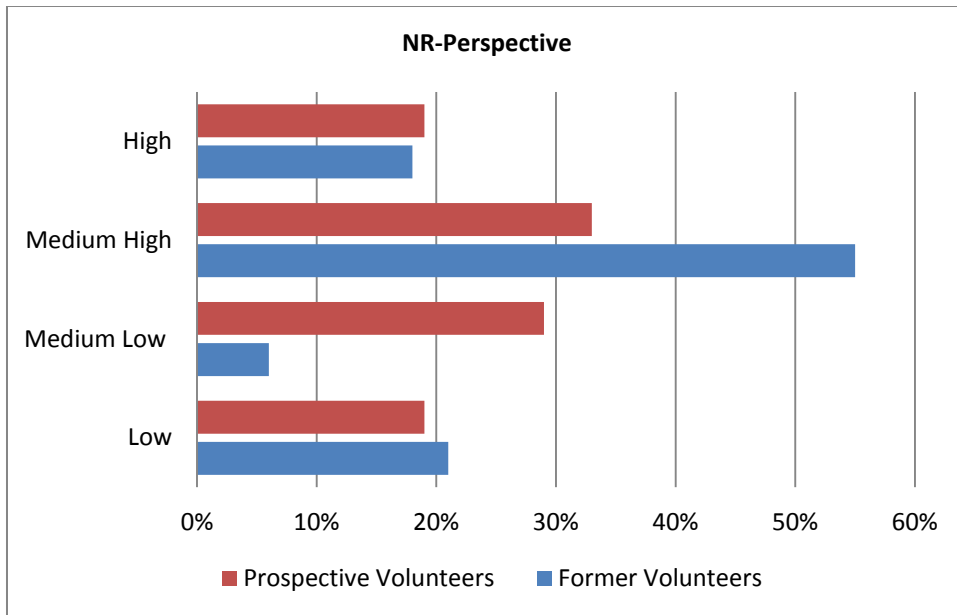


Figure 5. Percentage of prospective and former volunteers with a high, medium-high, medium-low and low level of NR-Perspective

5.2.1.3. NR-Experience

Compared to NR and the other two sub-scales, volunteers scored relatively poorly when it comes to NR-Experience. Only 23% of prospective volunteers and 45% of former volunteers reached a medium-high or high level meaning that over three-fourths of future ICVs and WMVs and over half of all the ICV alumni ended up with a low or medium-low score, however, with an emphasis on the medium-low one (figure 6).

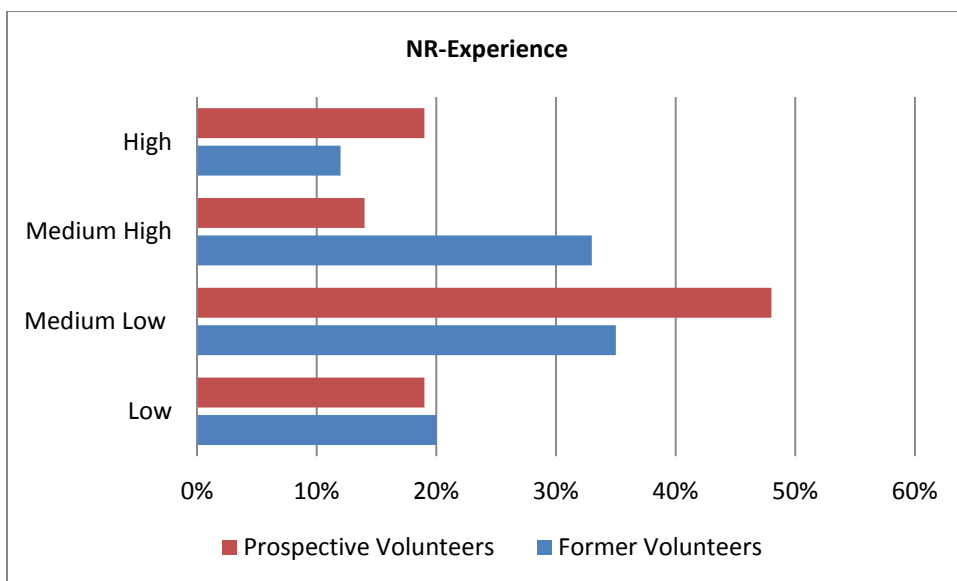


Figure 6. Percentage of prospective and former volunteers with a high, medium-high, medium-low and low level of NR-Experience

5.2.2. Self-reported Change

As mentioned above, former ICVs were asked to state to which extent they experienced a change in their appreciation for and their connection with¹⁹ nature as a result of their ICV time.

The two items yielded similar response rates as can be seen in figure 7: 6%, i.e. 3 participants perceived no change at all. One of them commented that his appreciation and connection with nature was huge both before and after his placements and directly linked this to his involvement in environmental work at the time.

94% of respondents believed that the programme had an impact on the two aspects. Concerning the

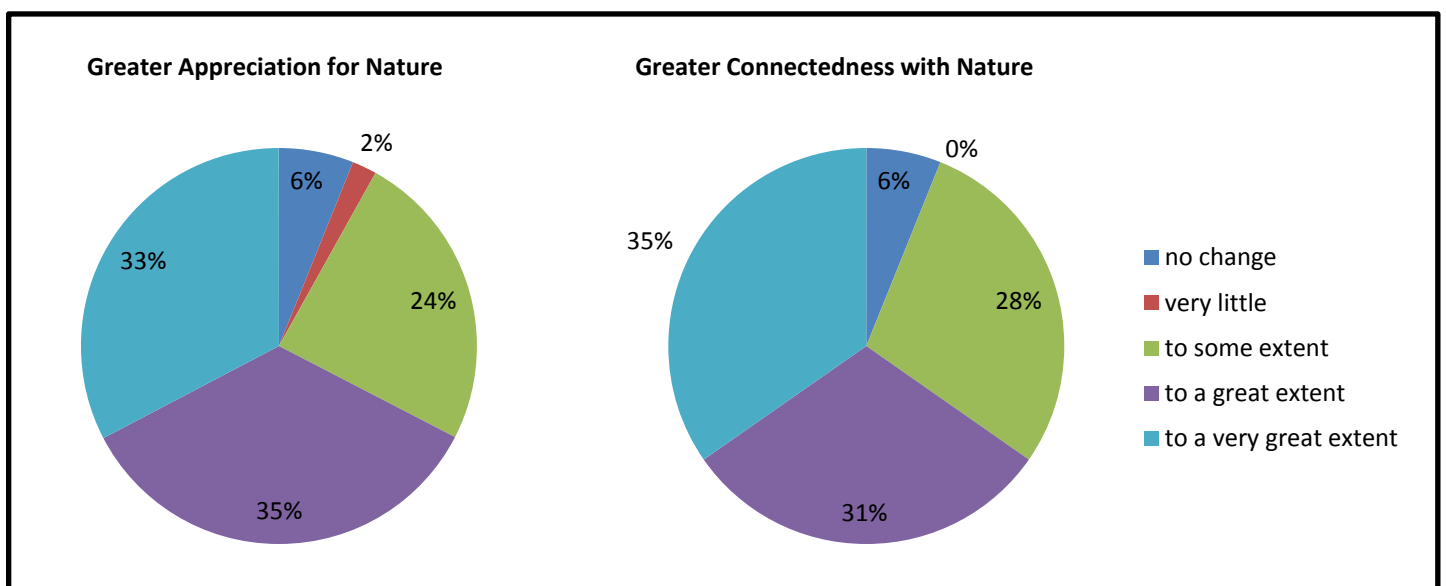


Figure 7. Perceived change in appreciation for and connectedness with nature as a result of the conservation magnitude, about two-thirds indicated that their experience in Iceland influenced their appreciation for and connectedness with nature either to a great or a very great extent.

One ICV alumni stressed the **duration of the project as determining factor**: “Spending more than a month in wilderness brings both greater appreciation and connectedness with nature”. Another volunteer, however, believed that being surrounded by nature every day, living and working in a natural environment for any period of time helps to connect to nature in a positive way.

Furthermore, two comments addressed the **longevity of the impact**: “The variety of wild, stark and extreme environments I visited and worked in had a huge impact on my relationship with, and

¹⁹ Explain why those two were chosen → appreciation (for what it is) vs. connection (with self)

understanding of nature, and stays with me to this day.” Another one stated that he has lost some connection as he is not doing as much environmental work anymore.

The interviews provided more insights on how the conservation volunteering project in Iceland was able to affect participants’ nature relatedness. When describing their most memorable experience, five out of the seven interviewees referred to specific landscapes and/or interactions with the natural world. For example, one ICV alumnus recalled climbing up to the top of a canyon and watching the midnight sun. Two others reminisced about the geothermal area around lake Mývatn in Northern Iceland – a surreal landscape as one of them stated. Yet another former volunteer thought back about a river crossing she did.

Several interviewees mentioned that they now spend more time outside than before their stay in Iceland. Two cases are especially noteworthy: In one instance the participant took part in the project because of her interest in Icelandic culture and literature and not because of nature-related reasons. In fact, she referred to her pre-Iceland-self as a ‘desk person’ that spent most of her time inside. During her stay, however, she started to enjoy doing things outside and fell in love with Iceland’s nature. Nowadays she does a lot of walking and takes an interest in all the birds and plants around her. Another ICV alumnus confessed that she was not really an outdoorsy person until her mid-twenties. Now it is quite the opposite for her:

“I feel stressed if I can’t go for a walk and this is directly related to spending three months outdoors and I get this urge to camp and just wanna sleep in a tent for a night.”

Both interviewees stressed the positive benefits in terms of reduced stress-levels and feeling cleansed and refreshed after having spent time out in nature thus suggesting both an increased level of NR-Self and NR-Experience. But even in cases where participants felt quite connected to the natural world beforehand, did the experience increase their “hunger for the outdoors” as one participant specified.

When asked about whether participating in the ICV project changed their attitude towards and concern for the natural world, one person said that she now thinks more about the environment while another one answered that he became more aware of what people do to it. The latter was confirmed by two other ICV alumni. One of them, a returning volunteer, started asking herself “Are they melting because of what we are doing?” after seeing how some glaciers had retreated more and more each time she came back. The other one became more aware of the human impact on the environment by experiencing a stark contrast between the tourists and the volunteers:

“Because we lived in tents, [it was] easy to see the difference between the tourists who just walk there and just throw their rubbish everywhere and us just being there and trying to do something for the nature. That was which made me realize that it is clearly important to be aware of your actions.”

These statements indicate an increased level of NR-Self and NR-Perspective. For both of them the ICV project was their first extended experience in nature. For two others, however, volunteering in and for nature had already been on their agenda, hence it was not surprising that they emphasized the fact that they had always been very critical and did not perceive any significant changes with respect to nature connectedness.

5.3. Pro-Environmental Behavior & Change

5.3.1. Pro-Environmental Behavior

Figure 8 graphically shows the distribution of prospective (red) and former (blue) volunteers according to their PEB scores. 31% of former ICVs have a high PEB score compared to only 19% of prospective ICVs and WMVs - a difference of more than ten percentage points. Looking at the medium-high category, a similar, yet less distinct, result is visible: 29% of prospective volunteers versus 35% of former volunteers. Taken together this means that about two-third of the participating ICV alumni ended up in either the high or medium-high PEB category as opposed to less than half of the participating prospective ICVs and WMVs.

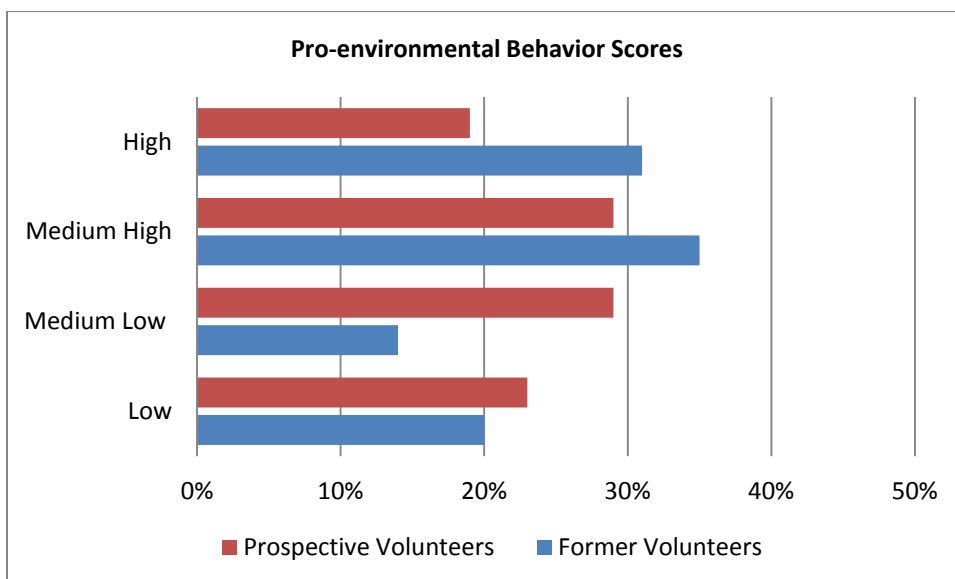


Figure 8. Percentage of prospective and former volunteers with a high, medium-high, medium-low and low level of PEB

Concerning the individual behaviors, table 11 below provides an overview of how many (in %) prospective versus former volunteers perform each of them either 'always' or 'most of the time'. For the sake of simplicity, the difference is presented in percentage points (pp). Those behaviors that have a difference of more than or equal to ten percentage points are highlighted in bold. In the following sub-sections each of the categories will be presented individually.

Table 11. Comparison of the percentages of behavior that are performed 'always' or 'most of the time' between prospective volunteers and former volunteers

Category	Behavior	Prospective Volunteers (in %)	Former Volunteers (in %)	Difference ²⁰ (in pp)
Waste	recycle my waste	90	96	6
	compost organic waste	38	49	11
	reuse or repair items instead of throwing them away	57	82	24
	bring my own bag for shopping	90	82	-9
Shopping & Food Choices	buy products with less packaging	52	67	15
	eat vegetarian/vegan	33	35	1
	buy organic and/or locally-grown food	52	51	-1
	Buy environmentally-friendly products	52	55	3
Transport Actions	walk, bike or use public transport for shorter trips	95	90	-5
	share a car journey with someone else	57	45	-12
Domestic Water & Energy Use	save water by taking shorter showers	52	57	5
	turn off tap while brushing teeth	81	90	9
	turn off or unplug appliances when not in use	86	92	6
Ecosystem Behaviors	make my garden/outdoor space attractive to wildlife	19	41	22
	put food out for birds/hedgehogs/foxes, etc.	19	27	7
Debates &	take part in demonstrations about	14	8	-6

²⁰ The difference was calculated by subtracting prospective volunteers' scores from future volunteers' scores. Hence, a minus sign indicates that prospective volunteers scored higher.

Protest	environmental issues			
	vote for a party/candidate that supports environmental protection	52	59	7
	engage in debates about environmental issues	29	51	22

5.3.1.1. Waste

The waste-related behavior performed most frequently is recycling which is done either always or most of the time by 90% of prospective volunteers and 96% of former volunteers (figure 9). This is followed by bringing one’s own bag for shopping. In both cases the difference between the two groups is less than ten percentage points though. When it comes to reusing or repairing items instead of throwing them away, however, a whole 82% of ICV alumni reported to do it often as compared to only 57% of prospective volunteers – a difference of 25 percentage points. Additionally, almost half of all the former volunteers compost their organic waste regularly, but only 38% of prospective ICVs and WMVs. However, it should be mentioned that almost one-fourth of all the future volunteers chose to reply with ‘not applicable’ and were hence not considered. Only 12% of ICV alumni went for this option.

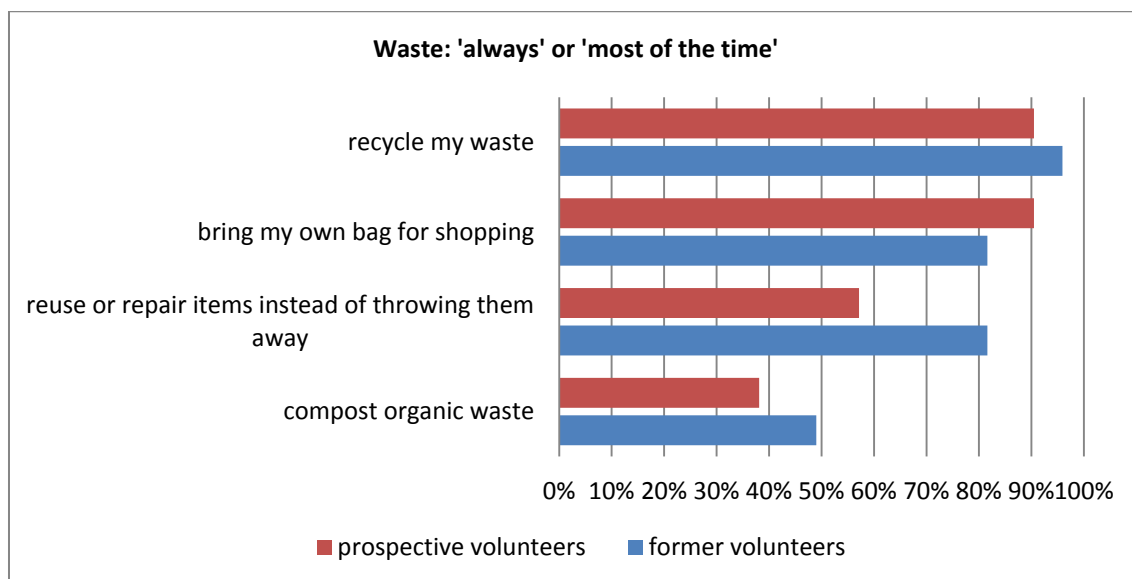


Figure 9. Percentage of prospective and former volunteers that ‘always’ or ‘most of the time’ perform the listed waste-related behaviors

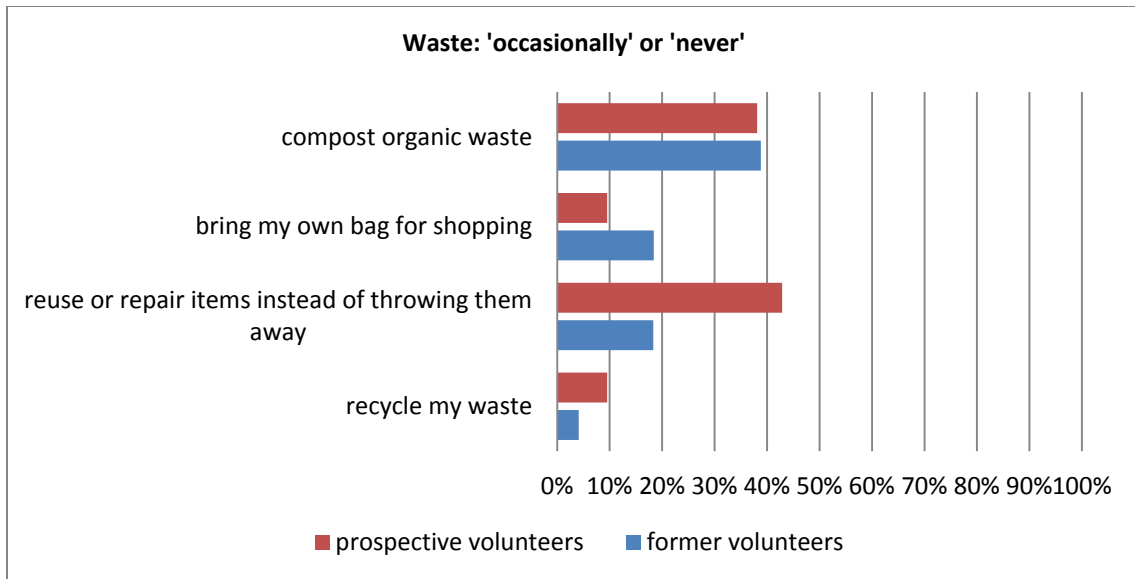


Figure 10. Percentage of prospective and former volunteers that ‘occasionally’ or ‘never’ perform the listed waste behaviors

5.3.1.2. Shopping & Food Choices

Buying products with less packaging is the only behavior in this category that exhibits a significant difference when it comes to future and former volunteers’ reported frequency (figure 11). Slightly more than two-third of the ICV alumni versus around half of all the prospective volunteers perform the behavior either always or most of the time. With respect to the other three shopping and food choices, however, the results do not differ by more than six percentage points in either of the two graphs. Interestingly, the behavior acted out the least is eating vegetarian and/or vegan. 63% of former ICVs and 67% of future ICVs and WMVs reported that they only do it occasionally or even never.



Figure 11. Percentage of prospective and former volunteers that ‘always’ or ‘most of the time’ perform the listed shopping & food choices

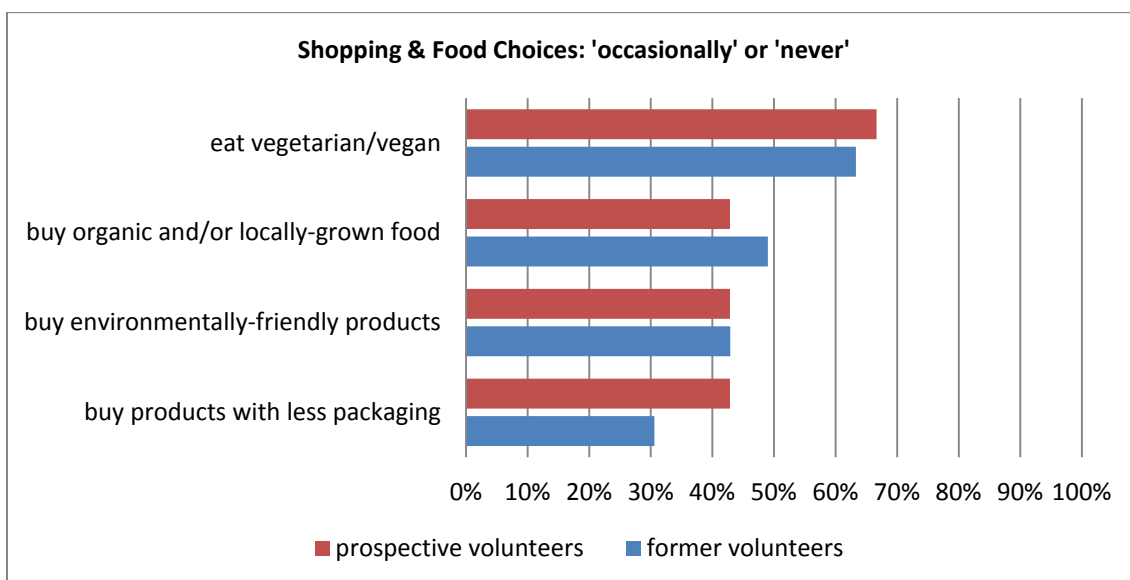


Figure 12. Percentage of prospective and former volunteers that ‘occasionally’ or ‘never’ perform the listed shopping & food choices

5.3.1.3. Transport Actions

95% of prospective volunteers and 90% of former volunteers reported to walk, bike or use public transport for shorter trips either always or most of the time (figure 13). Between-group results are more divergent when it comes to car-sharing: 57% of future volunteers versus only 45% of ICV alumni share a car journey with someone else on a regular basis. As opposed to the other behavior, engaging in car-pooling activities is far less common. In fact, 20% of the prospective ICVs and WMVs and 6% of the former ICVs chose the ‘not applicable’ option.

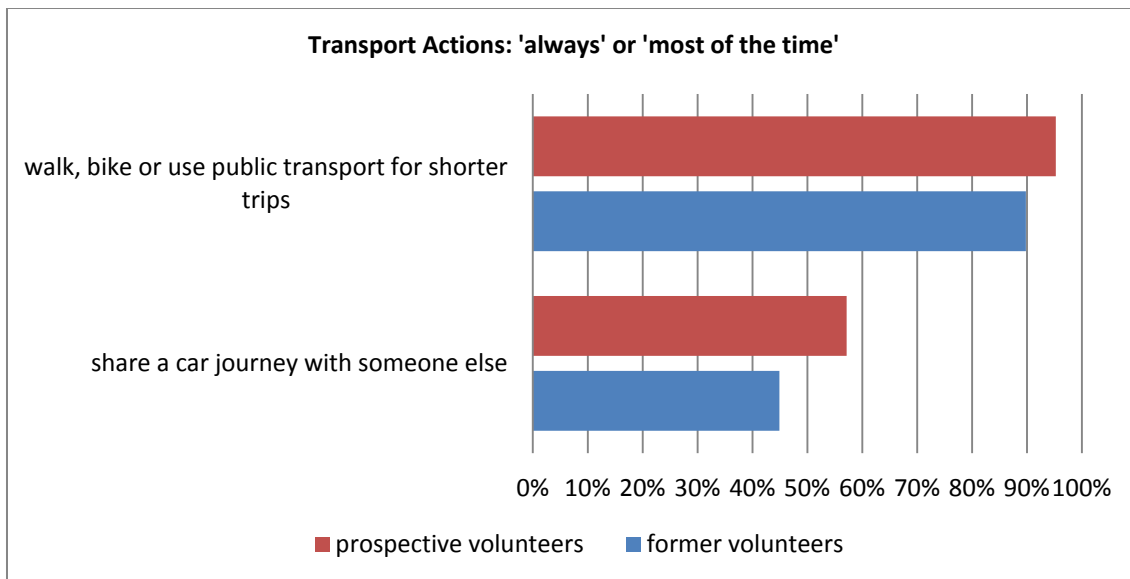


Figure 13. Percentage of prospective and former volunteers that ‘always’ or ‘most of the time’ perform the listed transport actions

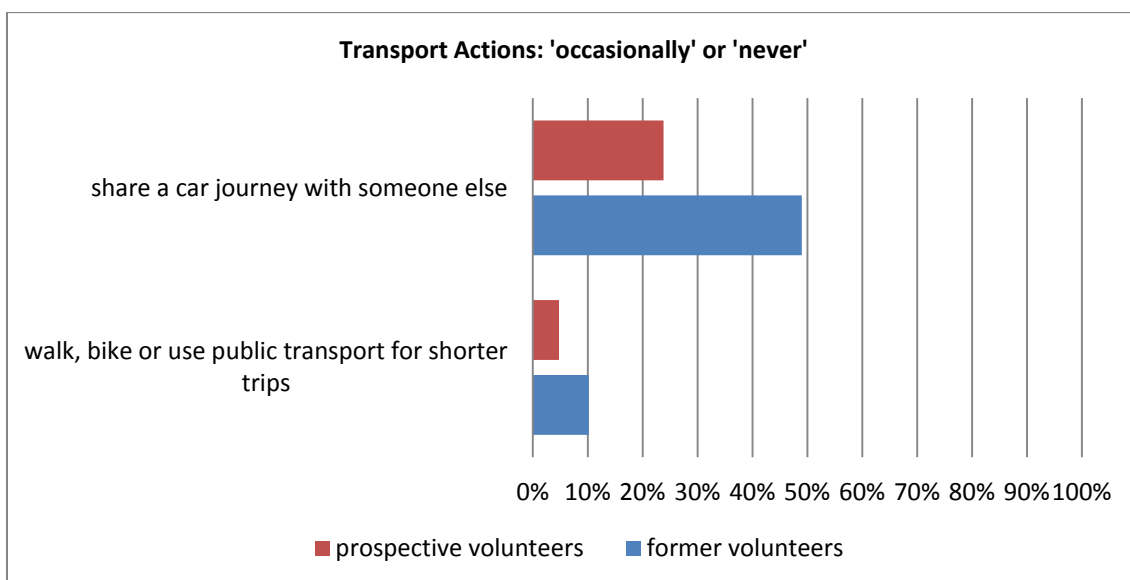


Figure 14. Percentage of prospective and former volunteers that ‘occasionally’ or ‘never’ perform the listed transport actions

5.3.1.4. Domestic Water & Energy Use

In all of the three cases, a higher percentage of former volunteers performed the listed behaviors either always or most of the time (figure 15). However, none of the differences is greater than ten percentage points. While turning of or unplugging appliances when not in use and turning off the tap while brushing teeth are done regularly by at least 80% of all the future volunteers and 90% of all the former volunteers, only about half of all the volunteers often take shorter showers in order to save water. Two of the ICV alumni (4%) even chose to answer with ‘not applicable’.

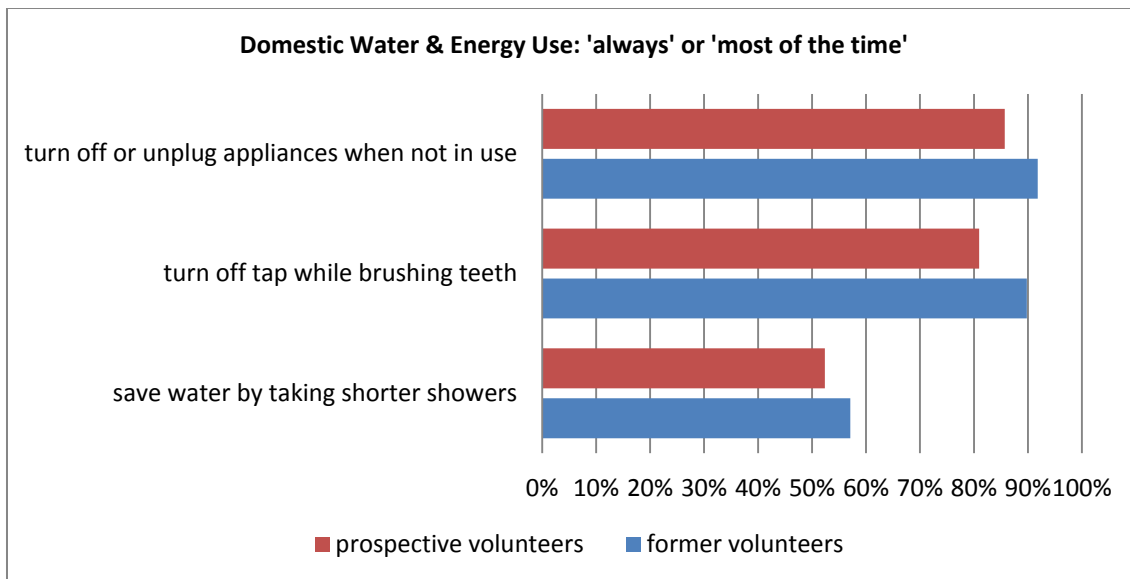


Figure 15. Percentage of prospective and former volunteers that ‘always’ or ‘most of the time’ perform the listed water and energy use-related behaviors

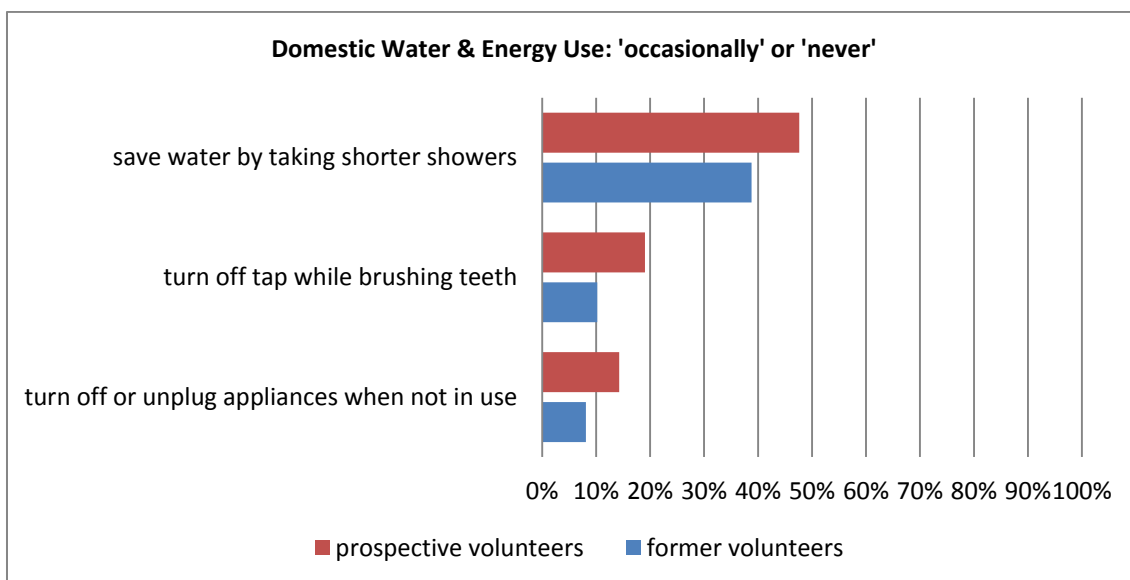


Figure 16. Percentage of prospective and former volunteers that ‘occasionally’ or ‘never’ perform the listed water and energy use-related behaviors

5.3.1.5. Ecosystem Behaviors

Almost half of all the prospective volunteers and more than one-third of all the former volunteers indicated ‘not applicable’ with respect to the ecosystem behavior ‘make my garden/outdoor space attractive to wildlife’. Consequently, it is one of the behaviors that is least frequently performed: However, while only 19% of future ICVs and WMVs try to enhance the attractiveness of their premises to wildlife on a regular basis, 41% of ICV alumni do so (figure 17). Concerning the other ecosystem behavior, however, the difference is far less significant with most of the volunteers

putting out food for birds, hedgehogs, etc. only occasionally or even never (figure 18). Since one-fourth of the prospective volunteers chose 'not applicable' but only 8% of the former volunteers, it is impossible to say which graph is more representative of actual behavior. In both cases, a higher percentage of prospective volunteers is shown.

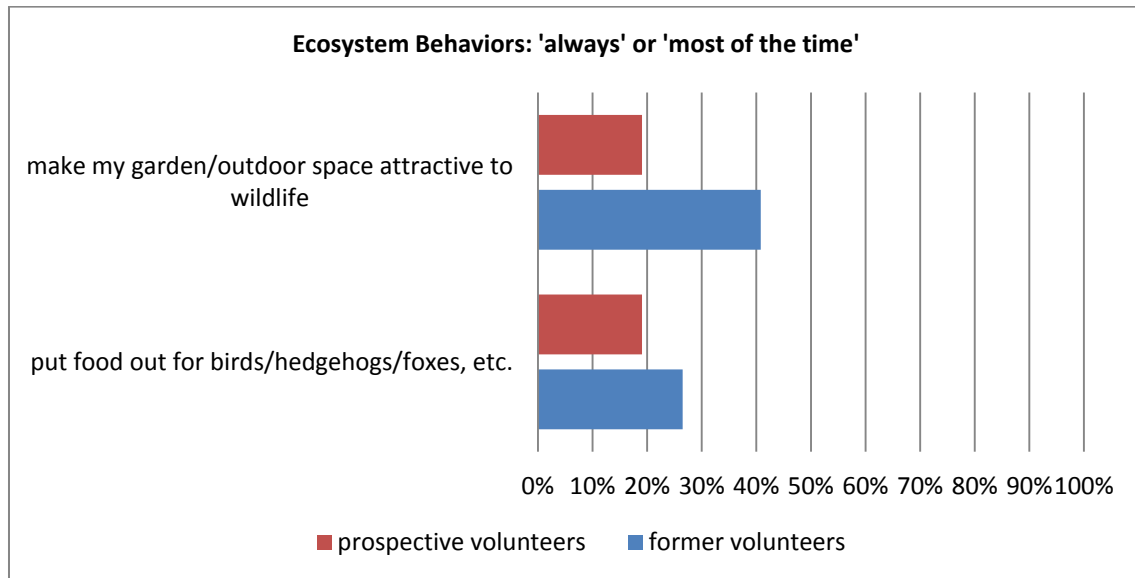


Figure 17. Percentage of prospective and former volunteers that 'always' or 'most of the time' perform the listed ecosystem behaviors

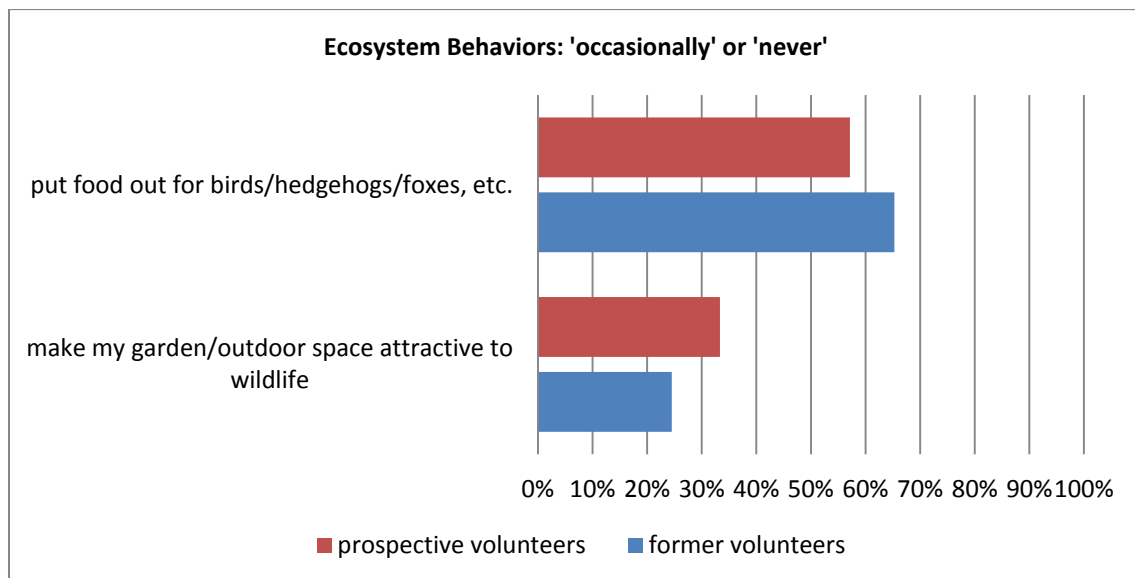


Figure 18. Percentage of prospective and former volunteers that 'occasionally' or 'never' perform the listed ecosystem behaviors

5.3.1.6. Debates & Protest

In two out of three cases, a higher percentage of former volunteers indicated that they always or most of the time engaged in debate and protest-related behaviors. However, only when it comes to

participating in debates about environmental issues, is the difference considerable (51% versus 29%) (figure 19). Despite the fact that 19% of prospective volunteers and 12% of the ICV alumni selected 'not applicable' regarding voting for a party/candidate that supports environmental protection, it is still the 'debates & protest'-behavior that is carried out most often among both groups. On the other side of the spectrum lies taking part in demonstrations about environmental issues: Only 8% of the former and 14% of the future volunteers participate on a regular basis as opposed to the 90% and 86% respectively, which do it either occasionally or never (figure 20).

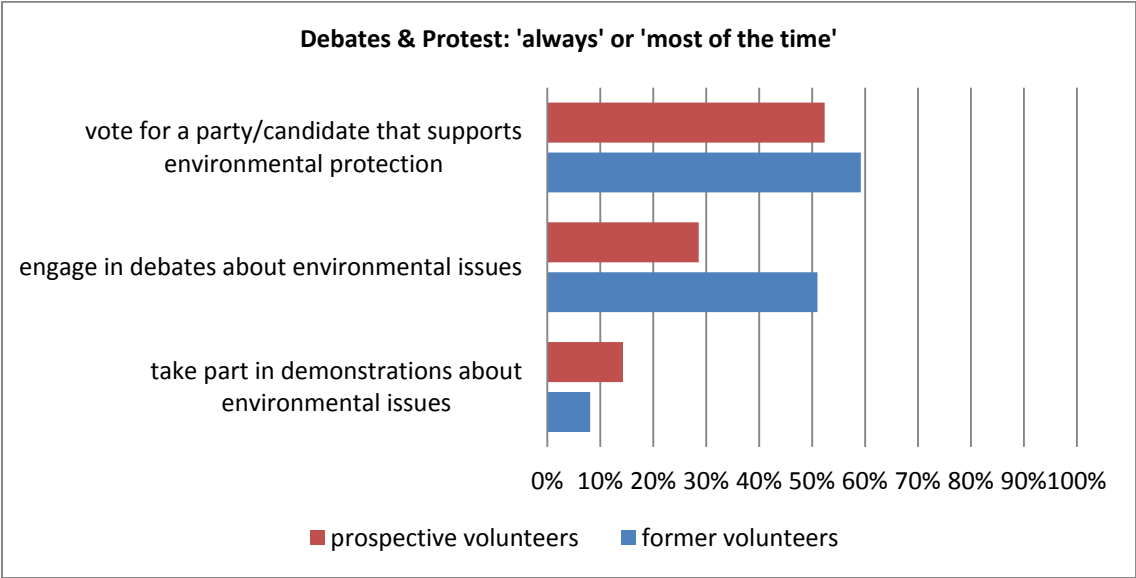


Figure 19. Percentage of prospective and former volunteers that 'always' or 'most of the time' engage in the listed debates & forms of protest

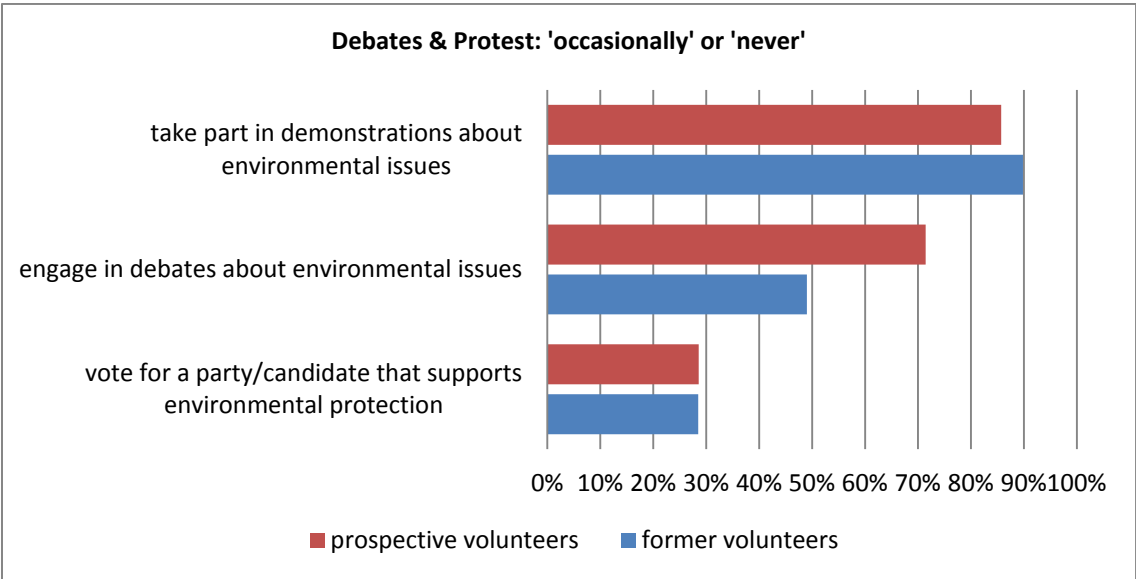
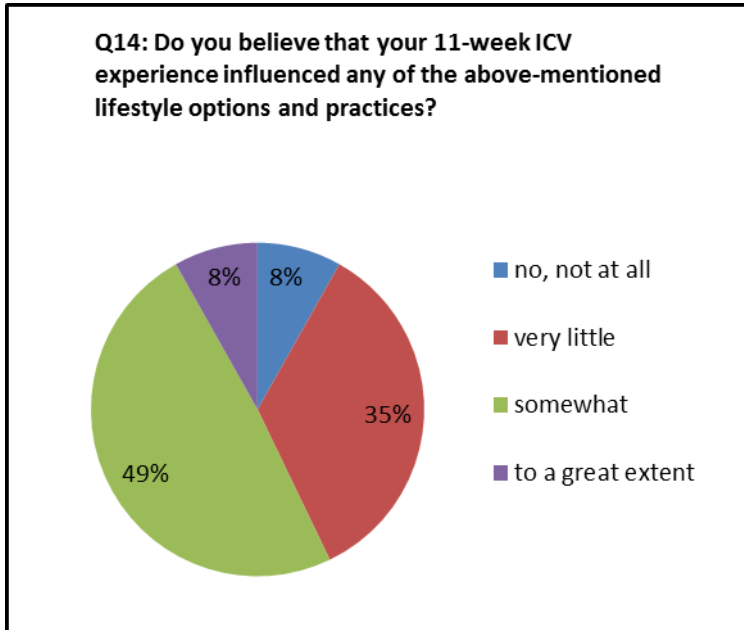


Figure 20. Percentage of prospective and former volunteers that 'occasionally' or 'never' engage in the listed debates & forms of protest

5.3.2. Self-reported Change

When asked to indicate to which extent ICV alumni believed that their experience in Iceland influenced any of the 18 behaviors, only 8% stated that it had no impact at all. For 1/3 the effect was



very little while almost half of the respondents perceived the extent to be somewhat. Finally, 8% thought that it influenced their actions to a great extent (figure 21). The range of responses was reflected in the interviews: Out of the seven interviewees, four said that they changed or adopted at least one behavior as a result of their ICV experience while two believed that they basically acted the same way as before. One interviewee was unsure and stated that “it is really

Figure 21. Self-reported influence of the ICV experience on behavior

hard to say whether the way I live now is a result of my time in Iceland, but it probably contributed. Definitely.”

The comment section and interviews yielded various explanations for the varying levels of change. For example, one respondent indicated that she did most of it already. Similarly, one of the interviewees said that she had always been quite a green person. Another participant wrote that he took part in the programme because of his environmental awareness. For yet another person the ICV programme reconfirmed a lot of previously held beliefs. These statements are in line with the general assumption that most of the people that decide to apply for the programme are already quite conscious about environmental issues and their impact on the environment.

Still, some statements showed that the experience had an impact on respondents’ behavior. In two cases this was due to an increased familiarity with nature which raised participants’ awareness about their impact on the environment and hence made them ‘act accordingly’. One respondent believed that the fact that volunteers only have access to a limited amount of resources during the project, makes them re-evaluate the things they have and use in their daily lives as well. Indeed, one interviewee said:

“I remember when I came home, when I came back to London and walked down the street at about ten at night and there were all these shops that were open and they were like “Buy stuff, you need things, buy things!” And I’m like “No, I don’t need anything right now. I went three months never buying anything”. So I just try to remember that sometimes and just be more thoughtful about what I’m buying, do I really need those things?”

This shift in attitude and behavior was also experienced by several other former volunteers who indicated that the ICV programme directly influenced their tendency and ability to live a more minimalist and simple life.

Various respondents mentioned concrete behaviors they had taken up, two of which are **shopping and food choice** examples: One ICV alumnus adopted a more climate-friendly diet while another one tries to buy food without packaging or with very little/recyclable packaging. The reasons for these changes were an increased awareness about the extent of waste food packaging during the 11 weeks and an exposure to other volunteers’ vegetarian and vegan eating styles and cooking practices.

Two other stated behavioral changes were linked to **waste**: One respondent commented that she started to reuse and repair things more often after her ICV experience. During the interviews, one participant mentioned that she now always brings her own bag when going shopping.

Concerning **transport** actions, one interviewee mentioned that he grew more conscious about when and how to travel. It did not feel normal anymore to just go by car everywhere. Instead, he now chooses to bike and use public transport more often.

In addition to the actions stated in the list of pro-environmental behaviors it should also be noted that conservation volunteering as such is already an enactment of green citizenship that positively contributes to the environment. As described above, 14% of former volunteers became engaged in other **nature conservation** or environmentally-related activities after their placement. Whether this was a direct result of their ICV experience cannot be determined from the survey, but was possible to establish during the interviews: One interviewee started volunteering with the UK conservation charity National Trust upon her return. Another interviewee returned to the ICV project three more times, thus contributing an additional four months to conservation work in Iceland. Lastly, one former volunteer intends to participate in a similar project after his upcoming graduation. All of the three have a non-environmental background with their participation in the 11-week programme being their first endeavour into the world of nature conservation.

Moreover, several volunteers mentioned that it had an impact on their **education and career choices**. For example, one survey respondent stated that she is now studying ecology and environmental management because of her experience. Another volunteer is certain that it was the experiences she gained in Iceland that have led to a paid job in the nature conservation sector. One of the interviewees quit his sales job a few days after his return and decided to become a geography teacher instead. He said that it was the Iceland experience which showed him what he really wanted to do with his life and that he would otherwise probably still be stuck in his old job. Similarly, one of the survey respondents wrote:

“Working with ICV changed my plans for the future. I found a project and an activity that I have a 100% enthusiasm for, while my studies at university for the job I intend(ed) to do were ‘just very interesting’.”

She now plans to change her job to a more hands-on, environmentally-oriented one.

5.4. Relationship between Connection with Nature and Pro-environmental Behavior

The 70²¹ NR and PEB-scores that were correlated are visually presented in figure 22 with NR on the x-axis and PEB on the y-axis. The 21 sets of values from prospective ICVs and WMVs are presented in red and the 49 from former ICVs in blue. Surprisingly, the two markers with the lowest NR-scores and some of the lowest PEB-scores belong to ICV alumni, thus challenging the assumption that NR and PEB levels are generally higher for former volunteers than for future volunteers.

The correlation coefficient (r) which measures the strength and direction of the linear relationship between two variables equals 0.6895 in this case (*Taylor, 1990*). To determine whether the correlation is significant, the degrees of freedom (df) were calculated²² and a table of critical values of r ²³ was consulted. The correlation coefficient in this case is substantially higher than 0.3060 which is the critical value for a one-sided test at 68 df and a p -value of 0.005. This means that the null hypothesis that there is no correlation between the two variables can safely be rejected in favour of the alternative hypothesis that there is a positive²⁴ relationship. Since the coefficient is between 0.68 and 1, the correlation can be regarded strong (*Taylor, 1990*).

²¹ Since the sample size is larger than 30, a normal distribution can be assumed (*Chang, Huang & Wu, 2006*).

²² $df = n - 2$, where n refers to the sample size. Hence, $df = 70 - 2 = 68$

²³ These are readily available online, e.g. at <http://capone.mtsu.edu/dkfuller/tables/correlationtable.pdf>

²⁴ The relationship is positive as r is above 0.

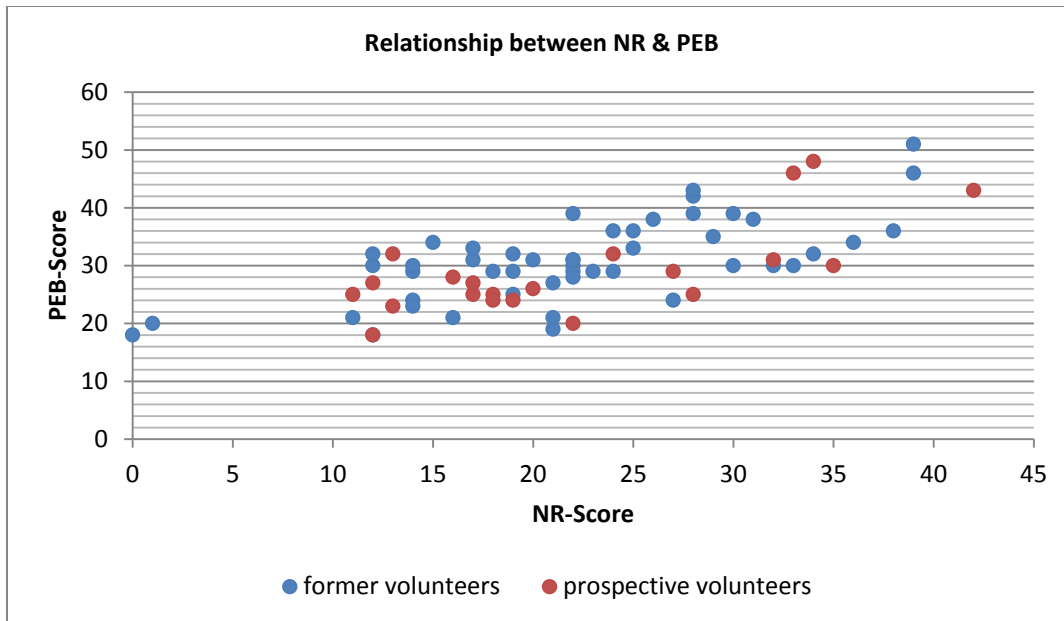


Figure 22. Correlation between NR & PEB

The coefficient of determination (R^2) is a value between 0 and 1 that measures how well the regression line represents the data (Taylor, 1990). The higher the value, the better the fit. In this case, R^2 which is calculated by taking the square of r equals 0.4754. Hence, 47.54% of the total variation in y , i.e. PEB-scores, can be explained by the linear relationship between NR and PEB-scores.

Conclusively, the data set provides strong evidence that nature relatedness and pro-environmental behavior are positively related. The fact that only half of the variation is explained by the model is in accordance with the fact that multiple factors are needed to fully explain the variance in PEB. Lastly, it is important to keep in mind that correlation does not imply causation (Aldrich, 1995). Hence, neither the correlation coefficient nor the coefficient of determination is able to show whether the relationship is causal, i.e. whether one of the variables has an impact on the other one. Several survey and interview comments, however, indicate that it was the reinforced connectedness with nature that made them more aware and hence made them reconsider their lifestyles.

6. Discussion

In the following, the quantitative and qualitative findings will be discussed in light of the research questions that guided this thesis. I compare my findings to the literature on nature relatedness and pro-environmental behaviour change and discuss whether my findings support the assumption that

an extended conservation volunteering experience leads to increased levels of NR and PEB. I further discuss whether the outcomes support the hypothesis that there is a causal relationship between nature relatedness and pro-environmental behaviour change. I comment on the wider implications of my findings.

6.1. Research Question 1

RQ1. Does the participation in an extended conservation volunteering project increase connection with nature?

The results of the comparison of the two NR-scales were not able to support the assumption that former volunteers' connection with nature is higher than prospective volunteers'. In every case did a higher percentage of prospective ICVs and WMVs attain a high level. Only in the case of NR-Self, however, did the difference turn out to be more than ten percentage points between alumni and prospective volunteers, suggesting that future volunteers are more likely to have a higher internalized identification with nature. When taking high and medium-high levels together though, ICV alumni scored higher across all scales which would be in line with the assumption. As mentioned before, the data was analyzed using a different method than the one prescribed by the creators of the 21-item scale due to sample size limitations. Hence, pre-determined reliability and validity cannot be assumed to hold for the present approach. Furthermore, it is acknowledged that the Likert method of setting up scales, though commonly used to measure feelings and attitudes, faces several limitations (*Hodge & Gillespie, 2007*).

Aside from the analytical restrictions, one plausible explanation for the mixed results may be the distorting effects of outliers. As can be seen in the scatter plot (figure 22 in chapter 5.4) two ICV alumni generated surprisingly low NR-scores of zero and one respectively – a substantial divide to the third lowest score of 11²⁵. However, the spread of the remaining data sets is similar between the two groups.

Also unexpected was the finding that all volunteers scored relatively poorly with respect to NR-Experience which refers to one's physical familiarity with the natural environment. Especially in light of the fact that the participation in the volunteering project requires living and working in nature this seems fairly unlikely to hold true. While the unpredictable climate was indeed mentioned several times when ICV alumni were asked about any less enjoyable aspects of their experience, the

²⁵ Since none of the two was interviewed though it is impossible to establish the cause for their low scores.

interviews revealed that the majority of former and prospective volunteers regularly engage in outdoor activities.

In contrast, the self-reported change data and interviews provided clearer results with almost all of the former volunteers reporting to have increased their appreciation for and connection with nature as a result of their experience. Mere exposure can be seen as one explanation: According to Hinds & Sparks (2008) being directly and repeatedly exposed to an attitude object likely favours the development of an emotional connection with it. Kals, Schumacher & Montada's findings (1999), however, suggest that experiences need to be positive in order to translate into emotional affinity towards nature.

The varying levels of change that were reported in the interviews suggest that connection with nature, concern and awareness about environmental problems increase most if participants had only little prior interaction with the natural world before taking part in the project. This is not surprising and can be explained with the law of diminishing returns. As such it is a law from the field of economics which posits that effectiveness declines the more of an input of production is added (*"diminishing returns"*, 2013). Applied to this case it implies that the more one is exposed to nature the less does it add to one's connection with nature as one's level is already quite high. Hence, in order to maximize the impact of a nature experience individuals that are not yet overly familiar with the natural world should be incentivized to take part in the activities.

6.2. Research Question 2

RQ2. Does the participation in an extended conservation volunteering project increase pro-environmental behavior?

The results of the comparison of the two PEB scores suggest that ICV alumni may indeed be more likely to exhibit a higher level of pro-environmental behavior as opposed to those that are yet to have their conservation volunteering experience. Concerning the individual behaviors, however, the data generated mixed results: Some behaviors are more often performed by former volunteers while others are more often executed by prospective volunteers. Only one-third of the PEBs show a difference of at least ten percentage points though (table 12). Thereby, five out of the six examples further support the assumption that volunteer alumni are more likely to act in an environmentally-friendly way. However, the comparative data can only show whether there is a difference, but not what the underlying reasons are. Especially considering the fact that about half of all the former volunteers participated in the programme more than two years ago, further information is required

to see whether it is indeed the extended conservation volunteering experience that has led to participants' higher levels of PEB.

Support can be found in the self-reported change data: The majority of ICV alumni indicated that their experience in Iceland influenced their behaviour, both in the survey and during the interviews. One reason that emerged was an increased awareness and concern about environmental issues. This sensitizing potential of nature experiences has been supported by Finger's (1994) study on the relationships between environmental experiences, learning and behavior. Indeed, one explanation for the perseverance of unsustainable behaviour is the fact that it is often difficult to understand their negative outcomes (Vining & Ebreo, 2002). Hence, by actively observing and experiencing for example the melting of glaciers and the adverse effects of tourism on the natural world, some volunteers were able to establish a better connection between human behaviour and environmental degradation.

At the same time, taking part in the volunteering project enabled several volunteers to see the positive impact they could have through the work they were doing. Being able to contribute to environmental work and seeing the difference "at the end of the day" likely built some of the volunteers' sense of empowerment and contributed to, amongst others, the continuing engagement in nature conservation. This is in line with Hawthorne and Alabaster's (1999) finding that "[t]hose who take part in environmental activities understand the impact of their actions and have a greater internal locus of control than those who do not." (p. 40). Thus, participating in an extended volunteering project may strengthen one's perceived behavioural control vis-à-vis certain behaviors which is deemed important for enhancing behavioural intention according to Ajzen's TPB.

Another way in which the volunteering experience has shown to influence behaviour was by providing time and space for reflection. By allowing volunteers to take a break from their daily routines, by enabling them to live and work in nature without the many choices and distractions modern life demands and offers, volunteers had an opportunity to reflect about themselves, their goals and priorities in life. As one volunteer emphasized: "Iceland teaches you a whole new perspective on what is important." This was supported by the fact that several participants changed their career trajectories²⁶ and/or downscaled their lives in light of the minimalist lifestyle they experienced in Iceland. Hence, by providing favourable circumstances for reflection, conservation volunteering projects may help in the formation of pro-environmental values and attitudes which are important antecedents of PEB according to both the TPB and VBN.

²⁶ However, this effect should not be generalized as a lot of the volunteers were at natural transition phases in their lives anyway and hence likely to be more susceptible and open to new trajectories than others.

Looking at the specific behaviours that have been influenced, it is not surprising that the biggest difference has been found in the behavior “reuse or repair items instead of throwing them away”. This behaviour reflects the notion of a more simplistic lifestyle and is one that is highly related to the experience in Iceland.

Table 12. Individual behaviors with a difference between prospective volunteers and former volunteers of more than or equal to ten percentage points (‘always’ or ‘most of the time’). The items are ranked according to difference from highest to lowest.

Category	Behavior	Prospective volunteers (in %)	Former volunteers (in %)	Difference ²⁷ (in pp)
Waste	reuse or repair items instead of throwing them away	57	82	24
Debates & Protest	engage in debates about environmental issues	29	51	22
Ecosystem Behaviors	make my garden/outdoor space attractive to wildlife	19	41	22
Shopping & Food Choices	buy products with less packaging	52	67	15
Transport Actions	share a car journey with someone else	57	45	-12
Waste	compost organic waste	38	49	11

One reason for the fact that a difference has often been found to be negligible is that some PEBs have very high adoption rates across both groups making it difficult for one group to excel. This is especially the case for easy-to-perform actions such as bringing one’s own bag for shopping and turning off or unplugging appliances when not in use (*Hine, Peacock & Pretty, 2008*). External factors ‘demanding’ or facilitating the execution of a behavior may also lead to a high rate of adoption as posited by Ajzen’s TPB. In the case of recycling, which proved to be the behavior carried out to a great extent by almost all of the respondents, social norms and the existence of infrastructure are especially important (*Kollmuss & Agyeman, 2002*). Correspondingly, the role of the two factors was emphasized in the interviews with prospective volunteers: While one respondent from Germany reported to always recycle, the other two participants stated that it was hard since no one else did it and since there was no real infrastructure in place in their respective countries of residence in Southern and Eastern Europe. Hence, even if the willingness to perform a certain action is there, if social norms and one’s perceived level of behavioral control are low, one is less likely to engage in it.

²⁷ The difference was calculated by subtracting prospective volunteers’ scores from future volunteers’ scores. Hence, a minus sign indicates that prospective volunteers scored higher.

6.3. Research Question 3

RQ3. Is there a causal relationship between connection with nature and pro-environmental behavior?

The correlation analysis results show that there is a link between connection with nature and pro-environmental behavior. More specifically, the relationship is positive and strong implying that if one's level of nature relatedness increases, one's level of pro-environmental behavior follows suit and vice versa. This finding is in line with previous research (e.g. Mayer and Frantz, 2004; Nisbet, Zelenski & Murphy, 2009; Hoot and Friedmann, 2011). Whether the relationship is causal or not, however, could not be established quantitatively. Several survey comments and interview responses suggest that connection with nature is the independent variable influencing conservation behavior.

Amongst others, this hypothesis is supported by Kals, Schumacher and Montada's (1999) study which posits that emotional affinity with nature is a significant predictor of conservation behavior. Research results on the effect of nature experiences during childhood on pro-environmental attitudes and behavior suggest the same direction (e.g. Chawla, 1998; Wells & Likies, 2006). However, all of these studies acknowledge the fact that their results can at most provide an indication of a causal effect.

Mayer and Frantz (2004) propose that the relationship may actually be bi-directional "such that feeling a connection to nature leads to eco-friendly acts and that eco-friendly acts leads people to feel more connected to the natural world"

(p. 512). Considering the fact that conservation volunteering is a pro-environmental behavior this may indeed be the case, especially in light of the high percentage of former volunteers that reported a substantial increase in their appreciation for and connectedness with nature as a result of their volunteering experience. Figure 23 proposes how the relationship may look like: Conservation volunteering influences both NR and PEB

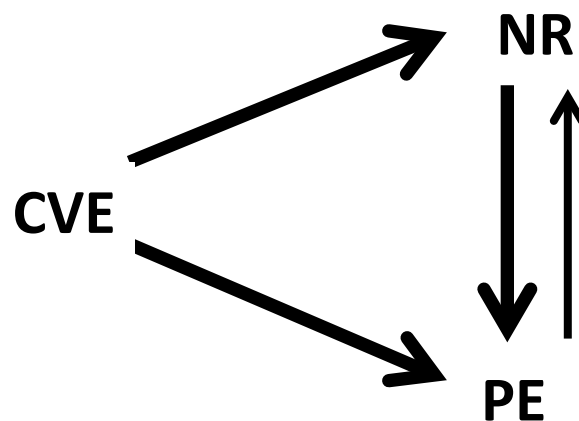


Figure 23. Proposed interaction between conservation volunteering experience (CVE), nature relatedness (NR) and pro-environmental behaviour (PEB)

which reinforce each other with NR having a larger impact on PEB. Overall, however, more research particularly in the form of prospective longitudinal studies is needed to investigate the causal relationship between the variables.

7. Wider Implications & Conclusion

The findings have several wider implications. Returning to the introduction of the thesis it was argued that the mere provision of information is unlikely able to close the value-action gap. As this thesis has shown, however, people that care about a particular place, that have a special connection to the natural world, can more likely be reached through emotional appeals. A very good example is IUCN's "Love. Not Loss" campaign which posits that appealing to people's love for nature is more powerful than trying to induce change by telling stories about environmental destruction (IUCN, 2010).

It has also been established that the impact of a conservation volunteering experience in terms of connection with nature is higher for people that are not overly familiar with the natural world yet. Hence, conservation volunteering programs could for example reach out to companies and encourage them to engage in corporate volunteering programs. Similarly, schools should be targeted to enable children to establish their connection with nature early on. These should not only remain one-time volunteering experiences. Instead, a long-term cooperation should be established to reinforce the impact. As Chawla (1998) stresses: "there is no single all-potent experience that produces environmentally informed and active citizens, but many together" (p. 381).

The case study of conservation volunteering in Iceland has shown that living and working in nature for an extended period of time has the potential to strengthen one's relationship with Mother Earth. Moreover, it may motivate the adoption of a more minimalist lifestyle upon return. Having an opportunity to reflect and to become more aware of humanity's influence on the environment seem to be two of the most compelling influences the experience offers. Conservation volunteering may thus have the potential to create concerned citizens that actively seek to minimize their negative impact on the environment.

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Appendix A: Survey – Former ICVs

Dear fellow ICV Volunteer,

Thank you for taking the time to fill out this survey! Your answers will be used for my master thesis at Lund University in which I seek to assess why people take part in the 11-week ICV programme and what impact the experience has on them. The 21 questions should take you around 8 minutes. Your responses will be kept confidential!

Have a great day,

Olga (ICV 2011)

ICV Experience

1. When did you complete the 11-week ICV programme?

- 2012
- 2011
- 2010
- 2009
- 2008
- earlier than 2008

2. What was your role in the 11-week ICV programme?

- volunteer
- team leader
- other: _____

3. Why did you decide to take part? Please choose all that apply.

- interest in nature conservation
- to care for the environment
- to travel around the country
- to spend time in nature
- to learn new skills
- to get a break from my everyday life
- to challenge myself

- to meet like-minded people
- to improve my physical and/or mental well-being
- other: _____

4. From the list above, which motivation or goal was most important to you?

- interest in nature conservation
- to care for the environment
- to travel around the country
- to spend time in nature
- to learn new skills
- to get a break from my everyday life
- to challenge myself
- to meet like-minded people
- to improve my physical and/or mental well-being
- other: _____

5. Was your most important goal achieved during your 11-week ICV experience?

- Not at all
- To a very little extent
- To some extent
- To a great extent

6. Overall how do you feel about your 11-week ICV experience?

- very negative
- negative
- neutral
- positive
- very positive

7. Have you come back a second, or multiple times, to volunteer after your initial 11-week ICV experience?

(e.g. as a returning volunteer or team leader)

yes

no

8. Have you been engaged in any nature conservation or environmentally-related activities other than the ICV programme?

(If yes, please also indicate whether this was before and/or after your 11- week ICV experience.)

yes, before

yes, after

yes, both before and after

no

Relatedness to Nature

9. For each of the following, please rate the extent to which you agree with each statement. Please respond as you really feel, rather than how you think “most people” feel.”

	Strongly Disagree	Disagree	Neither Disagree, Nor Agree	Agree	Strongly Agree
I enjoy being outdoors, even in unpleasant weather.	()	()	()	()	()
Some species are just meant to die out or become extinct.	()	()	()	()	()
Humans have the right to use natural resources any way we want.	()	()	()	()	()
My ideal vacation spot would be a remote, wilderness area.	()	()	()	()	()
I always think about how my actions affect the environment.	()	()	()	()	()
I enjoy digging in the earth and getting dirt on my hands.	()	()	()	()	()
My connection to nature and the environment is a part of my spirituality.	()	()	()	()	()

I am very aware of environmental issues.	()	()	()	()	()
I take notice of wildlife wherever I am.	()	()	()	()	()
I don't often go out in nature.	()	()	()	()	()

10. For each of the following, please rate the extent to which you agree with each statement. Please respond as you really feel, rather than how you think "most people" feel."

	Strongly Disagree	Disagree	Neither Disagree, Nor Agree	Agree	Strongly Agree
Nothing I do will change problems in other places on the planet.	()	()	()	()	()
I am not separate from nature, but a part of nature.	()	()	()	()	()
The thought of being deep in the woods, away from civilization, is frightening.	()	()	()	()	()
My feelings about nature do not affect how I live my life.	()	()	()	()	()
Animals, birds and plants should have fewer rights than humans.	()	()	()	()	()
Even in the middle of the city, I notice nature around me.	()	()	()	()	()
My relationship to nature is an important part of who I am.	()	()	()	()	()
Conservation is unnecessary because nature is strong enough to recover from any human impact.	()	()	()	()	()
The state of non-human species is an indicator of the future for humans.	()	()	()	()	()
I think a lot about the suffering of animals.	()	()	()	()	()

I feel very connected to all living things and the earth.	()	()	()	()	()
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11. To what extent did you experience the following as a result of your 11-week ICV experience?

	No change	Very little	To some extent	To a great extent	To a very great extent
Greater appreciation for nature	()	()	()	()	()
Greater connection with nature	()	()	()	()	()

Comments²⁸

Pro-Environmental Behaviour

12. Please indicate how often you perform the following activities.

	always	most of the time	occasionally	never	N/A
recycle my waste	()	()	()	()	()
turn off or unplug appliances when not in use	()	()	()	()	()
buy products with less packaging	()	()	()	()	()
walk, bike or use public transport for shorter trips	()	()	()	()	()
turn off tap while brushing teeth	()	()	()	()	()
compost organic waste	()	()	()	()	()
save water by taking shorter showers	()	()	()	()	()

²⁸ voluntary

make my garden/outdoor space attractive to wildlife	()	()	()	()	()
buy organic and/or locally-grown food	()	()	()	()	()
put food out for birds/hedgehogs/foxes, etc.	()	()	()	()	()

13. Please indicate how often you perform the following activities.

	always	most of the time	occasionally	never	N/A
share a car journey with someone else	()	()	()	()	()
engage in debates about environmental issues	()	()	()	()	()
eat vegetarian/vegan	()	()	()	()	()
buy environmentally-friendly products	()	()	()	()	()
take part in demonstrations about environmental issues	()	()	()	()	()
reuse or repair items instead of throwing them away	()	()	()	()	()
vote for a party/candidate that supports environmental protection	()	()	()	()	()
bring my own bag for shopping	()	()	()	()	()

14. Do you believe that your 11-week influenced any of the above-mentioned lifestyle options and practices?

(Please also elaborate in the comments box below.)

- () No, not at all
- () Very little
- () Somewhat
- () To a great extent

Comments²⁹

Background Information

15. Would you be fine with me contacting you to have a more in-depth conversation about your volunteering experience?

(If yes, please leave your e-mail address in the comments box below.)

yes

no

Comments

16. Where are you originally from?

dropdown menu with a list of countries

17. What is your gender?

female

male

other

18. How old were you when you completed the 11-week ICV programme?

20 – 24 years

25 – 29 years

30 – 34 years

35 – 39 years

40 – 44 years

older than 44 years

²⁹ voluntary

19. What is your highest level of formal education?

- high school
- vocational school
- bachelor degree
- master degree
- other: _____

20. Did your education/job/main activity before your 11-week ICV experience involve the natural environment in any way?

(e.g. environmental studies, natural resource management, urban planning, etc.)

- yes
- no

21. Is there anything else you would like to say about your 11-week ICV experience?

Thank You!

Thank you for taking my survey!

Your response is very important for improving my study and if you are interested in learning about the results once they are ready, please send me an email to olga.horn.473@student.lu.se.

And please share this survey with other ICV volunteers you may know (especially if they are not on facebook)!

Appendix B: Survey – Prospective ICVs & WMVs

Dear prospective ICV/Thórs mörk trail volunteer,

Thank you for taking the time to fill out this survey!

Your answers will be used for my master's thesis at Lund University in which I seek to assess why people take part in the 11-week ICV programme/6-week wilderness management programme in Thórs mörk, what attitudes they hold and what their background is. The following 15 questions should take you around 5 minutes. Your responses will be kept confidential!

Have a great day,

Olga (Volunteer in 2011)

Upcoming Experience

1. What will be your role in the 11-week ICV programme/6-week wilderness management programme?

volunteer

team leader

other: _____

2. Why did you decide to take apply for the 11-week ICV programme/6-week wilderness management programme? Please choose all that apply.

interest in nature conservation

to care for the environment

to travel around the country

to spend time in nature

to learn new skills

to get a break from my everyday life

to challenge myself

to meet like-minded people

to improve my physical and/or mental well-being

other: _____

3. From the list above, which motivation or goal is most important to you?

interest in nature conservation

- to care for the environment
- to travel around the country
- to spend time in nature
- to learn new skills
- to get a break from my everyday life
- to challenge myself
- to meet like-minded people
- to improve my physical and/or mental well-being
- other: _____

4. Have you been or are you currently engaged in any nature conservation or environmentally-related activities?

- yes
- no

Relatedness to Nature

5. For each of the following, please rate the extent to which you agree with each statement. Please respond as you really feel, rather than how you think “most people” feel.”

	Strongly Disagree	Disagree	Neither Disagree, Nor Agree	Agree	Strongly Agree
I enjoy being outdoors, even in unpleasant weather.	()	()	()	()	()
Some species are just meant to die out or become extinct.	()	()	()	()	()
Humans have the right to use natural resources any way we want.	()	()	()	()	()
My ideal vacation spot would be a remote, wilderness area.	()	()	()	()	()
I always think about how my actions affect the environment.	()	()	()	()	()
I enjoy digging in the earth and getting dirt on my hands.	()	()	()	()	()

My connection to nature and the environment is a part of my spirituality.	()	()	()	()	()
I am very aware of environmental issues.	()	()	()	()	()
I take notice of wildlife wherever I am.	()	()	()	()	()
I don't often go out in nature.	()	()	()	()	()

6. For each of the following, please rate the extent to which you agree with each statement. Please respond as you really feel, rather than how you think "most people" feel."

	Strongly Disagree	Disagree	Neither Disagree, Nor Agree	Agree	Strongly Agree
Nothing I do will change problems in other places on the planet.	()	()	()	()	()
I am not separate from nature, but a part of nature.	()	()	()	()	()
The thought of being deep in the woods, away from civilization, is frightening.	()	()	()	()	()
My feelings about nature do not affect how I live my life.	()	()	()	()	()
Animals, birds and plants should have fewer rights than humans.	()	()	()	()	()
Even in the middle of the city, I notice nature around me.	()	()	()	()	()
My relationship to nature is an important part of who I am.	()	()	()	()	()
Conservation is unnecessary because nature is strong enough to recover from any human impact.	()	()	()	()	()
The state of non-human species is an indicator of the	()	()	()	()	()

future for humans.					
I think a lot about the suffering of animals.	()	()	()	()	()
I feel very connected to all living things and the earth.	()	()	()	()	()

Pro-Environmental Behaviour

7. Please indicate how often you perform the following activities.

	always	most of the time	occasionally	never	N/A
recycle my waste	()	()	()	()	()
turn off or unplug appliances when not in use	()	()	()	()	()
buy products with less packaging	()	()	()	()	()
walk, bike or use public transport for shorter trips	()	()	()	()	()
turn off tap while brushing teeth	()	()	()	()	()
compost organic waste	()	()	()	()	()
save water by taking shorter showers	()	()	()	()	()
make my garden/outdoor space attractive to wildlife	()	()	()	()	()
buy organic and/or locally-grown food	()	()	()	()	()
put food out for birds/hedgehogs/foxes, etc.	()	()	()	()	()

8. Please indicate how often you perform the following activities.

	always	most of the time	occasionally	never	N/A
share a car journey with someone else	()	()	()	()	()

engage in debates about environmental issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
eat vegetarian/vegan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
buy environmentally-friendly products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
take part in demonstrations about environmental issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
reuse or repair items instead of throwing them away	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
vote for a party/candidate that supports environmental protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
bring my own bag for shopping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Background Information

9. Would you be fine with me contacting you to have a more in-depth conversation about your upcoming volunteering experience?

(If yes, please leave your e-mail address in the comments box below.)

yes

no

Comments

10. Where are you originally from?

dropdown menu with a list of countries

11. What is your gender?

female

male

other

12. How old are you?

- 20 – 24 years
- 25 – 29 years
- 30 – 34 years
- 35 – 39 years
- 40 – 44 years
- older than 44 years

13. What is your highest level of formal education?

- high school
- vocational school
- bachelor degree
- master degree
- other: _____

14. Does your education/job/main activity involve the natural environment in any way?
(e.g. environmental studies, natural resource management, urban planning, etc.)

- yes
- no

15. Any last comments?

Thank You!

Thank you for taking my survey!

Your response is very important for improving my study and if you are interested in learning about the results once they are ready, please send me an email to olga.horn.473@student.lu.se.