



The impact of Citizen Science activities on participant behaviour and attitude

Project Report November 2013

The impact of Citizen Science activities on participant behaviour and attitude:

Project Report November 2013

Primary author: Megan Jones

Contributing authors: Kerry Riddell and Anthony Morrow

Project management: Kerry Riddell and Anthony Morrow

Acknowledgements

This research project was supported by the Scottish Environmental Protection Agency. We are grateful for the support of the SEWeb Public Engagement Officer, Rachel Harding-Hill, in instigating this project. We would like to thank our academic advisors for their support of the research methodology and data analysis: Alexander Gnanapragasam (University of St Andrews), Katrin Prager (James Hutton Institute), and Eugenia Rodrigues (University of Edinburgh). Our thanks also to colleagues at the following organisations for their help in disseminating the online survey:

Aberdeen University, Anglers Monitoring Initiative, Biological Recording in Scotland, British Geological Survey, British Trust for Ornithology, Buglife, Butterfly Conservation Trust, Central Scotland Forest Trust, Centre for Ecology and Hydrology, Clyde River Foundation, Dumfries & Galloway Council, Dumfries & Galloway Records Centre, East Lothian Council, East Renfrewshire Council, Environmental Research Institute, Forestry Commission Scotland, Friends of the Earth, Glasgow and Clyde Valley Green Network Partnership, Glasgow City Council, Glasgow University, Inner Forth Landscape Initiative, Institute of Occupational Medicine, James Hutton Institute, Kilmartin House Museum, Laggan Forest Trust, Learning for Sustainability Scotland, Loch Lomond and the Trossachs National Park, Marine Scotland, Plantlife, Rivers and Fisheries Trust, Royal Botanic Garden Edinburgh, RSPB, Scottish Environment Link, Scottish Government, Scottish Natural Heritage, Scottish Wildlife Trust, SEPA, South Seeds, Stirling Council, The Ecology Centre, The Helix, and Transition Stirling.

Table of Contents

1. Introduction	5
2. Summary of findings	6
2.1 Existing Citizen Scientists	6
2.2 New Citizen Scientists	6
3. Project background	8
4. Research methodology	9
4.1 Literature review	9
4.2 Survey methodology	9
5. Results of survey with existing Citizen Scientists	12
5.1 Profile of existing Citizen Scientists	12
5.2 Effects of Citizen Science participation	13
5.3 Relationships between changes in understanding, attitude and behaviour	15
5.4 Connection to nature	17
5.5 Noteworthy behaviour change correlations	18
5.6 Health as a motivator	
5.7 The effect of gender	21
5.8 Age-related change	21
5.9 Participants' written answers	22
6. Results of survey with new Citizen Scientists	23
6.1 Profile of new Citizen Scientists	23
6.2 Effects of Citizen Science participation	23
6.3 Connection to nature	27
6.4 Health as a motivator	27
6.5 Correlations with attitude and behaviour change	29
6.6 Participants' written answers	30
7. Recommendations	30
7.1 Recommendations for SEWeb and partners on behaviour change through Citizen Science activities	30
7.2 Recommendations for SEWeb and partners on SEWeb as a gateway and focus	30
7.3 Recommendations for future research	31
References	32
Annexes	34
Annex A. Written answers from existing Citizen Scientists	34
Annex B. Written answers from new Citizen Scientists	49

Table of Figures

Figure 1. Participant awareness of Citizen Science	12
Figure 2. How often participants take part in Citizen Science activities	12
Figure 3. Impact of the frequency of Citizen Science participation on understanding, attitude and behaviour change	14
Figure 4. Correlation between increased understanding and attitude change	15
Figure 5. Correlation between increased understanding and behaviour change	15
Figure 6. Correlation between attitude change and behaviour change	16
Figure 7. Correlation between connection to nature and attitude & behaviour change	17
Figure 8. Summary of factors correlating with behaviour change	19
Figure 9. Gender differences in changes in understanding, attitudes and behaviour	20
Figure 10. Changes in knowledge after Citizen Science participation	24
Figure 11. Participant perception of the impact of human behaviour upon the local environment after Citizen Science	25
Figure 12. Participant valuation of their local greenspace after Citizen Science	25
Figure 13. Participant motivation to protect and enhance the environment after Citizen Science	25
Figure 14. Participant use of local greenspace after Citizen Science	26
Figure 15. Participant practical environmental action after Citizen Science	26
Figure 16. Do participants want to use their local greenspace more after Citizen Science?	26
Figure 17. Do participants want to take more environmental action after Citizen Science?	26
Figure 18. Participant involvement in their local community after Citizen Science	26
Figure 19. Changes in participant connection to nature after Citizen Science	28
Figure 20. Participant concern, after Citizen Science, about the local environment's impact on their health and well-being	28
Figure 21. Participant action, after Citizen Science, taken because of the environment's impact on their health and well-being	28

1. Introduction

This report is the culmination of a project undertaken by Scotland's Environment Web (SEWeb) and The Conservation Volunteers (TCV) to work with individuals and communities across Scotland to measure the impact of Citizen Science engagement on participants' environmental attitudes and behaviours.

Citizen Science is the term used to describe when members of the public collect environmental information that contributes to the expansion of our understanding of the natural environment. Although the term 'Citizen Science' is somewhat new, the practice itself goes back decades and includes activities such as biological recording, environmental monitoring and volunteer surveys.

SEWeb was launched in 2012 to bring together information on Scotland's environment, providing a hub for up to date information on Scottish environmental challenges and opportunities for public involvement. This report sets out the results of a research project undertaken by TCV and SEWeb in autumn 2013 to measure the influence that engagement in Citizen Science activities has upon participants' environmental attitudes and behaviours. This research will help us to understand the wider impacts of Citizen Science activities and inform the development of SEWeb and activities promoted on the site.

The project began with a literature review investigating existing research into the impact of Citizen Science on behaviour change. From these findings, and with the help of SEWeb and academic advisors, TCV developed three surveys, one for existing Citizen Scientists and two before and after surveys of new Citizen Scientists. Throughout the project every effort was taken to build a community of practice by creating and consulting with a network of academic advisors, and by promoting SEWeb to community groups, volunteers and colleagues in the sector.

2. Summary of findings

Our research suggests that there is a meaningful link between Citizen Science participation and increased environmental knowledge, attitudes and behaviour. This is particularly evident in the larger survey of existing Citizen Scientists, but small increases were also observed in a pilot with new Citizen Scientists. The fact that changes were more noticeable in existing Citizen Scientists than new Citizen Scientists suggests that continued or long-term engagement with Citizen Science may be important for effecting attitude and behaviour changes.

It is important to acknowledge that this report and the surveys of Citizen Scientists were undertaken within the capacity of TCV and its volunteers. In our analysis we have sought to highlight possible trends, but to date no analysis of significance has been done with these data.

2.1 Existing Citizen Scientists

A vast majority of respondents in the existing Citizen Scientists survey reported that their environmental understanding increased as a result of Citizen Science participation. A majority also reported that participation has led to them feeling stronger environmental attitudes, and taking more environmental action. Just under half also took part in more action in the local community as a result of their participation in Citizen Science activities.

Participants who carried out Citizen Science activities more than once a month were more likely to report increases in understanding and changes in attitude and behaviour than their less active counterparts.

The existing Citizen Scientists study also found that participation in Citizen Science resulted in an increased sense of connection to nature in more than half of participants. Connection to nature strongly correlated with both behaviour and attitude change. Increased knowledge and changes in attitude also correlated with behaviour change, with the most notable correlations being amongst participants who, as a result of Citizen Science, valued their local greenspace more or felt more motivated to protect and enhance the environment.

2.2 New Citizen Scientists

The effects of Citizen Science were less marked in new Citizen Scientists. Across three of the four measurements of environmental knowledge a majority of participants reported low levels of understanding before and after Citizen Science. Changes in knowledge among the remaining participants were both positive and negative.

In the new Citizen Scientists surveys, the majority of respondents reported holding pro-environmental attitudes before and after Citizen Science. A minority reported positive change, particularly in regards to motivation to protect the environment. Connection to nature also increased, as did participants' desire for a stronger connection to nature.

The vast majority of participants were already taking environmental action before Citizen Science and continued to do so afterwards. After taking part in Citizen Science, however, a quarter of participants had become interested in taking more environmental action than they were already. More than a third of participants also reported a higher usage of local greenspace after engaging in Citizen Science.

In contrast to the existing Citizen Science survey, the largest increases in participants' understanding, attitude and behaviour were in regards to the environmental and health.

3. Project background

Citizen Science has a significant role to play in achieving a wide range of outcomes for people and the environment. It is recognised as a tool for engaging people with the environment and increasing their understanding of its value. Research shows that through participating in projects which monitor the local environment, people increase their knowledge and awareness of the biodiversity of their local greenspaces. However there has been little research to explore the impact of Citizen Science activities on participants' wider lives and lifestyle choices in relation to the environment and sustainability. This project attempts to help begin to fill that gap by providing data that can be used to inform future Citizen Science research and projects, and in particular the continued development and efficacy of Scotland's Environment Web.

4. Research methodology

This research was undertaken to help inform the development of SEWeb and to increase the understanding of the effects of participation in Citizen Science or public monitoring activities on participant attitudes and behaviours.

4.1 Literature review

A literature review was conducted into existing research on Citizen Science and behaviour change. This revealed that there is a dearth of research into the impacts of Citizen Science or public monitoring activities on participants' long-term behaviour. However, the review was still able to draw some key conclusions and make recommendations. We used this review to shape the survey questions we and determine activities done with group participants. For more detail, the literature review can be read [here](#).

4.2 Survey methodology

TCV Scotland developed a research methodology to measure the impact of engagement in Citizen Science activities upon participants' attitudes and behaviours towards the environment and its positive management. This methodology was designed to fit in with ongoing and new Citizen Science projects, and be practicable within a range of public monitoring activities.

Building on the literature review, surveys were designed and delivered with the aim of:

1. Developing a methodology to assess the impact of participation in Citizen Science activities on individuals' environmental attitudes and behaviours
2. Identifying trends in participants' attitude and behaviour change based on Citizen Science experience, connectedness to nature, demographics, health concern, and other factors
3. Investigating relationships between changes in understanding, attitudes and behaviour amongst participants in Citizen Science

4.2.1 *Question design*

Questions on the surveys sought to determine participants':

1. Basic demographic information
2. Exposure to Citizen Science
3. Changes in environmental values, attitudes, motivations and behaviours
4. Qualitative explanations of attitudes and behaviours

To ensure robust research, survey design was finalised in consultation with the SEWeb Public Engagement Officer and a team of academic advisors, who all agreed on final versions of each survey. Academic advisors were Katrin Prager, at the James Hutton Institute, Eugenia Rodrigues, from the University of Edinburgh, and Alexander Gnanapragasam, at the University of St Andrews.

Questions were developed to reflect the learning from the literature review, focusing on the roles that motivation, understanding and experience play in affecting behaviour. We also aimed to elicit any correlations between Citizen Science participation and changes in knowledge, attitude and behaviour. Survey contents can be clearly divided into these three areas, following a recommendation made by the academics to reduce confusion for participants.

To avoid over-burdening respondents, several important types of questions were not included. The surveys did not seek to identify what specific Citizen Science activities participants had done, or over what time period. No questions were included to assess the impact of peer acceptance or group behaviour on attitudes and behaviour. Although group dynamics were pointed to in the literature review as an important factor in Citizen Science engagement, they would have been particularly difficult to measure with regards to new Citizen Scientists, as the volunteer group composition can change from week to week.

4.2.2 Survey dissemination and implementation

Surveys were completed by two groups of people engaged in a range of Citizen Science activities, including both environmental monitoring and biological recording.

Group 1: Existing Citizen Scientists were surveyed to ascertain perceptions of long term attitude and behavioural change resulting from their involvement in Citizen Science activities. An online survey was created using Google's online survey tool and, following initial promotion, was accessible for online completion for 6 weeks. Participants in this survey were self-selecting and anonymous.

The online survey for existing Citizen Scientists was hosted on SEWeb, and sent to colleagues at the following 42 organisations:

Aberdeen University, Anglers Monitoring Initiative, Biological Recording in Scotland, British Geological Survey, British Trust for Ornithology, Buglife, Butterfly Conservation Trust, Central Scotland Forest Trust, Centre for Ecology and Hydrology, Clyde River Foundation, Dumfries & Galloway Council, Dumfries & Galloway Records Centre, East Lothian Council, East Renfrewshire Council, Environmental Research Institute, Forestry Commission Scotland, Friends of the Earth, Glasgow and Clyde Valley Green Network Partnership, Glasgow City Council, Glasgow University, Inner Forth Landscape Initiative, Institute of Occupational Medicine, James Hutton Institute, Kilmartin House Museum, Laggan Forest Trust, Learning for Sustainability Scotland, Loch Lomond and the Trossachs National Park, Marine Scotland, Plantlife, Rivers and Fisheries Trust, Royal Botanic Garden Edinburgh, RSPB, Scottish Environment Link, Scottish Government, Scottish Natural Heritage, Scottish Wildlife Trust, SEPA, South Seeds, Stirling Council, The Ecology Centre, The Helix, and Transition Stirling.

Surveys were also sent to former five Natural Communities Trainees, ten local recorders at the county or recording centre level, and forty Natural Talent apprentices, past and present. All contacts were asked to forward information about the survey to others and encourage them to complete it.

Group 2: 'New' Citizen Scientists were surveyed using a baseline and follow up methodology, to identify attitude and behavioural change over a four month period of participation in Citizen Science activity.

The literature review recommendations suggested that it was important to engage with these participants over a longer period, using an expert to increase motivation and allowing time for reflection. Although we were able to include expert involvement, our engagement time with these subjects was constrained to a period of 12 weeks because of the set length of the project.

To engage with these subjects, we worked with four existing TCV volunteer teams from Glasgow, Stirling and Renfrewshire who had a history of good attendance and working together as a group. This also allowed for an expert to easily work alongside the group for the delivery of Citizen Science activities.

Delivery of the Citizen Science activities varied from group-to-group because of differences in:

- The number of volunteering sessions attended by participants,
- The number of sessions delivered by an expert,
- The other work-based activities forming the bulk of participants' volunteer day,
- The Citizen Science activities conducted by each group, which varied depending on time availability and the particularities of the sites at which the group worked.

Each of these variables was controlled as far as possible, but the nature of the TCV volunteering experience precluded complete control. It was decided that, on balance, the opportunity to engage with a range of volunteers over several months outweighed these negatives.

Prior to volunteers' participation in Citizen Science, copies of a paper baseline survey were given to the four Volunteer Team Leaders. They were responsible for ensuring that participating volunteers completed the forms within a required time period. Some subjects experienced challenges in completing the form, and Volunteer Team Leaders supported these volunteers to complete both baseline and follow-up surveys.

One participating volunteer group (five participants) received sustained input from an expert over the four months. The other three groups took part in 3 to 4 guided sessions of Citizen Science, including activities such as the OPAL Air Survey and BRISC recording. After participating volunteers completed these Citizen Science sessions within the four-month period, the Team Leaders administered the paper follow-up survey.

Steps were taken to ensure that each member of staff delivering Citizen Science activities gave the following message to volunteers: "By doing this activity you are taking part in Citizen Science. Citizen Science is really important in monitoring the health and well-being of our environment, local greenspaces and the species that call them home. There are loads of different types of Citizen Science activities out there that might be of interest to you and match up with the types of things you enjoy doing in your own time."

5. Results of survey of existing Citizen Scientists

Sixty existing Citizen Scientists completed the online survey from 2nd September to 3rd October 2013. This was twenty more than the target population set in the project objectives.

5.1 Profile of existing Citizen Scientists

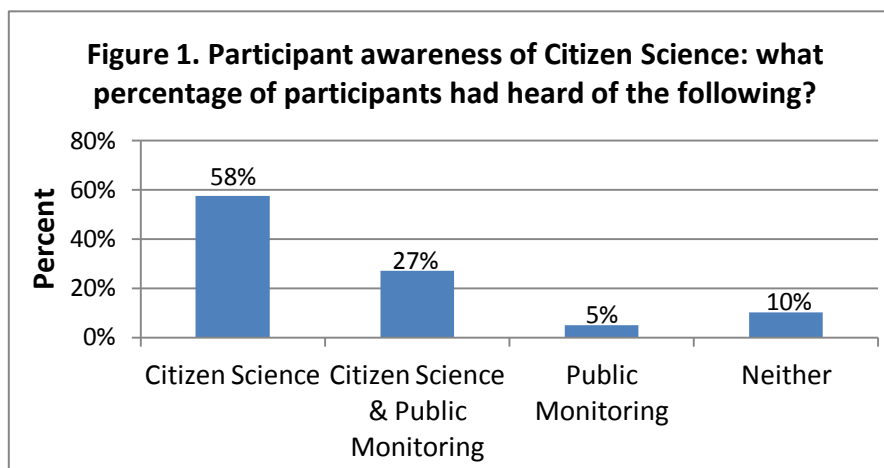
5.1.1 *Demographics*

Participants were asked to give their gender, age and employment status. The gender split was relatively even, with 55% female and 45% male. The majority of respondents were younger to middle-aged adults, with 47% aged 26-40, 42% aged 41-65, and 12% over 65. Most respondents were also employed fulltime (67%) with 15% in part-time employment, 3% students, 7% unemployed, and 8% no answer.

5.1.2 *Exposure to Citizen Science*

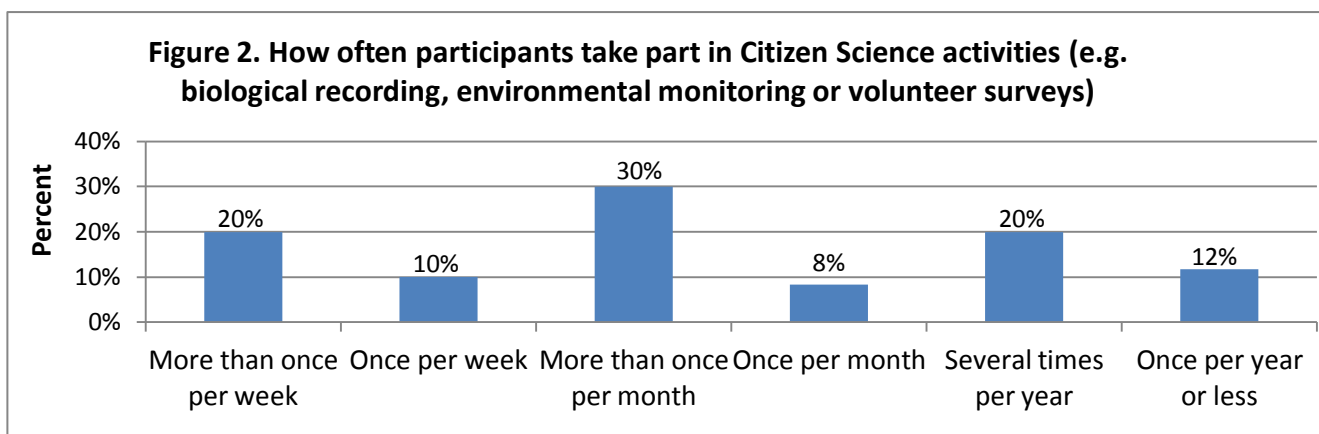
Participants were asked about their awareness of and participation in Citizen Science activities. However, the survey did not ask participants to specify what Citizen Science activities were undertaken, their level of expertise or their length of experience.

Awareness of Citizen Science was high, with 90% of respondents having heard of Citizen Science, Public Monitoring, or both (Figure 1).



5.1.3 *Frequency of Citizen Science participation*

There was a wide spread in participation frequency, ranging from more than once a week to once a year or less. The majority – 68% – of respondents reported taking part in Citizen Science at least once a month, with only 12% taking part once a year or less (Figure 2).



5.2 Effects of Citizen Science Participation

5.2.1 *The effect of participation frequency*

Regular Citizen Scientists (i.e. those participating at least once a month) were almost universally more likely to report increased understanding and changes in attitude and behaviour than their less active counterparts (i.e. those participating less than once a month) (Figure 3). The greatest disparities between the two groups were, in descending order, what percentage of each:

1. Changed their view of human environmental influence
2. Felt an increased connection to nature
3. Increased their participation in local community activities
4. Better understood the value of biological recording and environmental monitoring
5. Increased their participation in practical environmental action

The exception was that less active Citizen Scientists were slightly more likely to report an increased understanding of local environmental influence on their health and well-being.

5.2.2 *Knowledge gain*

The vast majority of all respondents reported that participation in Citizen Science had led to increased environmental understanding across the four measurements of knowledge gain.

5.2.3 *Changes in attitudes and behaviour*

The majority of respondents reported that participating in Citizen Science had strengthened their environmental attitudes and led them to take more environmental action. The biggest increases were in participant motivation and action taken to protect and enhance the environment, with 69% and 66% reporting an increase in these areas, respectively.

This positive trend continued with local greenspace. Around half of participants (51%) valued their local greenspace more after engaging in Citizen Science (with 46% valuing it a lot more) and the same amount (51%) now use their local greenspace more. Citizen Science also encourages participants to become more involved in their local community, as just under half (47%) reported that they now participate more in local community activities.

As a result of participating in Citizen Science activities:

90% of participants felt they now had a greater understanding of the value of Citizen Science.

92% felt they now had a greater understanding of:

1. People's role in protecting and enhancing their local environment.
2. How participating in environmental projects can influence personal health and well-being.

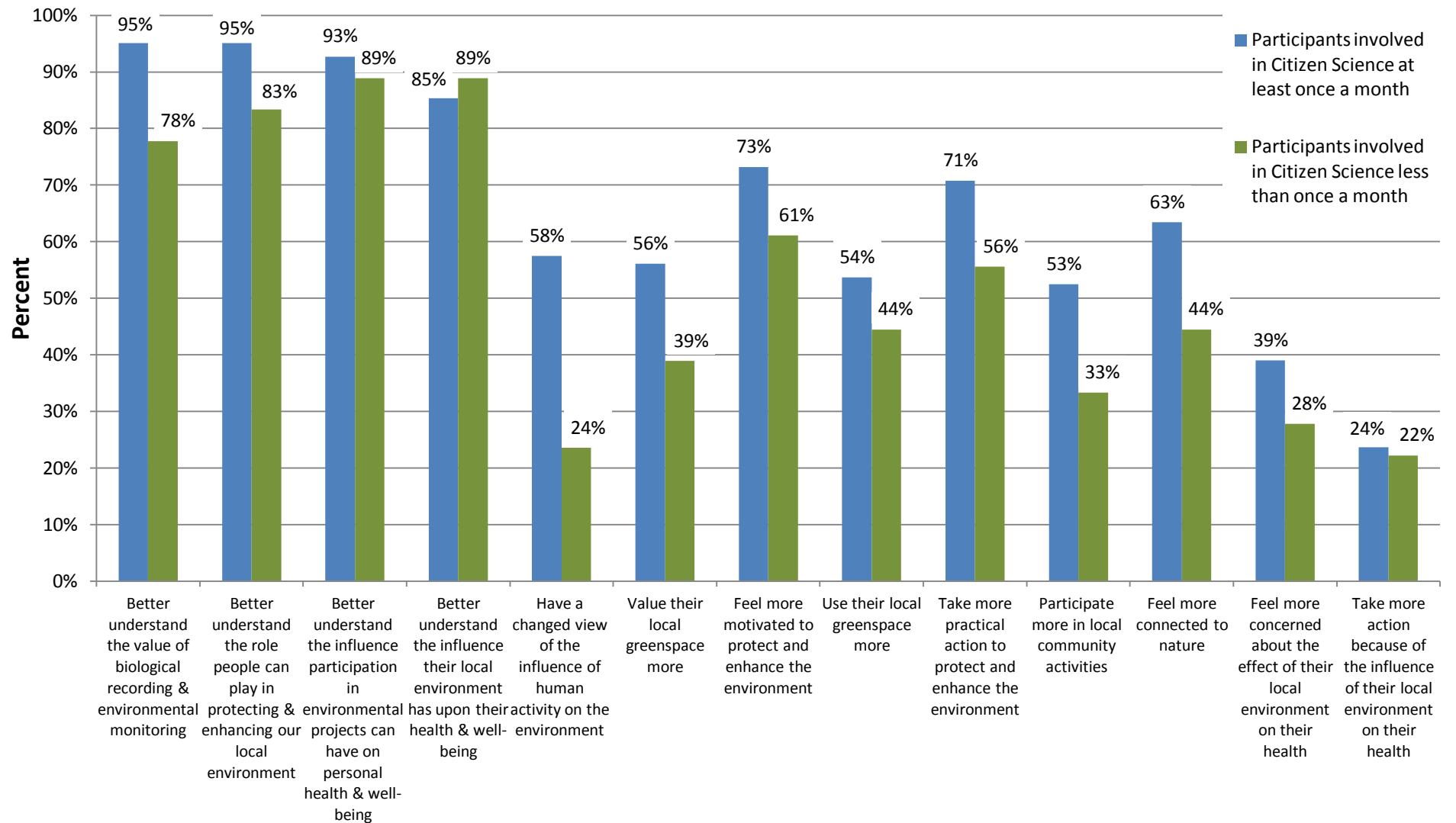
85% felt they now better understood how their local environment influenced their health and well-being.

69% feel more motivated to protect and enhance the environment.

66% take more action to protect and enhance the environment.

51% now value and use their local greenspace more.

Figure 3. Impact of the frequency of Citizen Science participation on understanding, attitude and behaviour change



How does Citizen Science change participants' views of human environmental influence?

It "has made me more aware of the impact that humans can have on specific habitats, as I am more aware of what lives there and how humans might impact up on that area."

I am "fascinated at the disconnection between environment and many human believes / behaviour. Delighted when being out and about monitoring allows engagement with some who just hadn't thought about the implications of their actions before and as a result they change a small part of their behaviour or learn something that inspires them."

"The more I get involved in citizen science and survey work, the more I see that human activity affects every aspect of the environment."

"I have a better understanding of the huge impact human activity can have on the environment if we do not understand how this occurs but also that we can have a positive effect by volunteering and working together as communities on local environmental projects."

The smallest attitude change was in the response to the question of human environmental influence, where 47% of respondents reported that their view of the influence of human activity on the environment had changed. In their written explanations (examples above) participants described a range of changes, from appreciating environmental action more to feeling more despair at human-driven environmental degradation.

5.3 Relationships between changes in understanding, attitude and behaviour

A noticeable proportion of respondents reported increasingly environmental tendencies across all metrics of attitude and behaviour change. It is important, therefore, to understand the ways in which those metrics interrelate, and in this section we begin to explore these interrelations.

5.3.1 Correlations between increased understanding and changes in attitude and behaviour

Participants who reported a knowledge gain were more likely than the average to report an increase in environmental attitudes and behaviour. In contrast, none of the participants who did not gain knowledge valued their local greenspace more. They were also only half as likely as to feel more motivated to protect and enhance the environment (Figure 4).

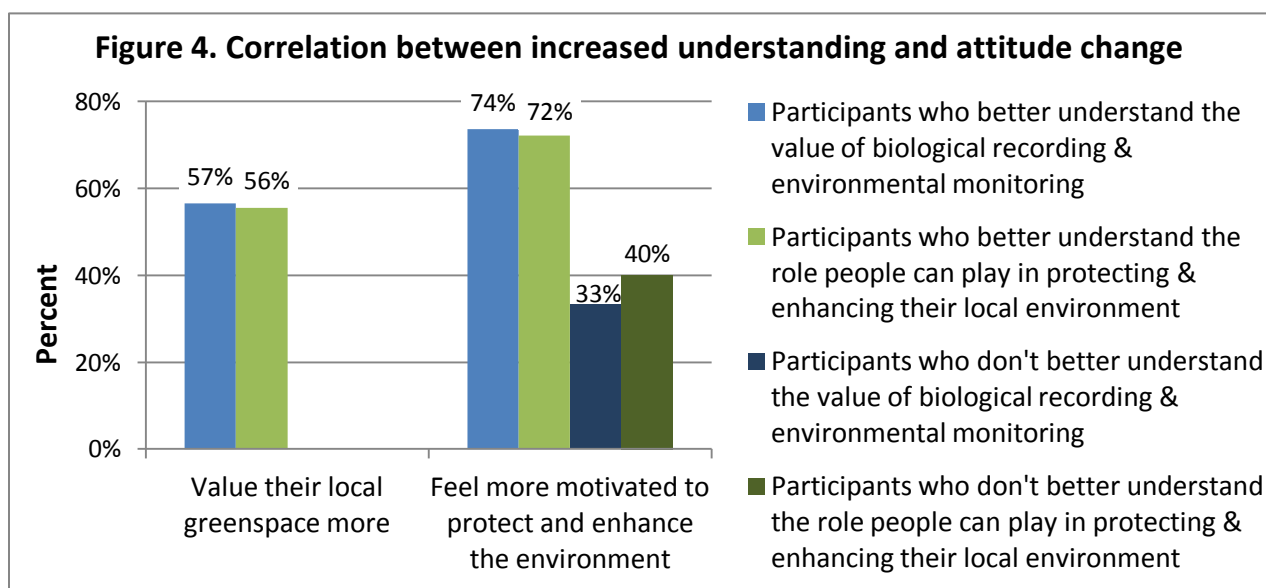
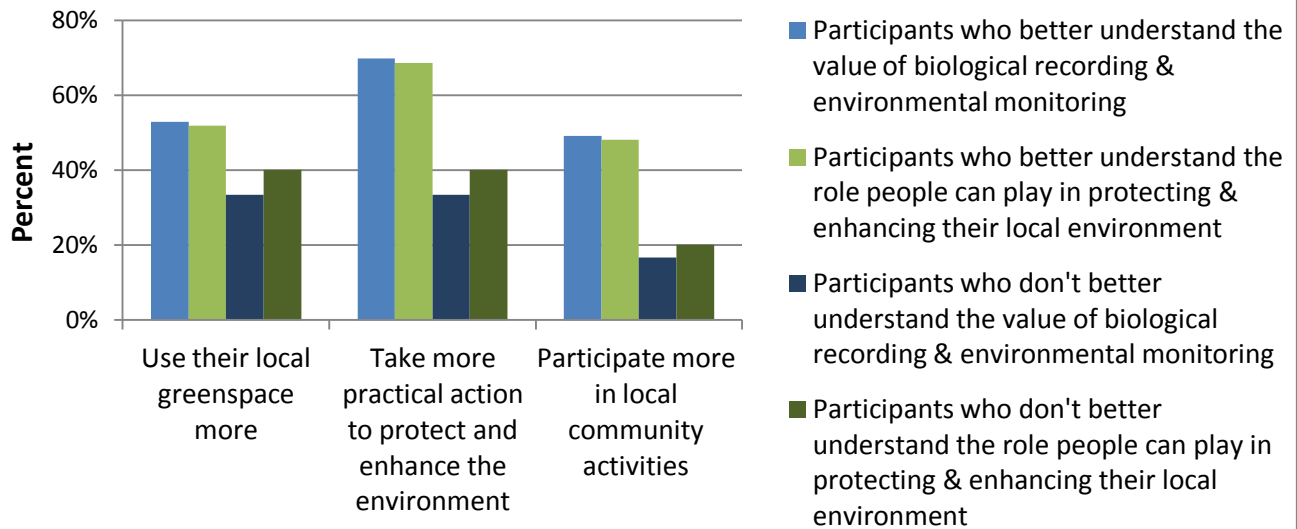


Figure 5. Correlation between increased understanding and behaviour change



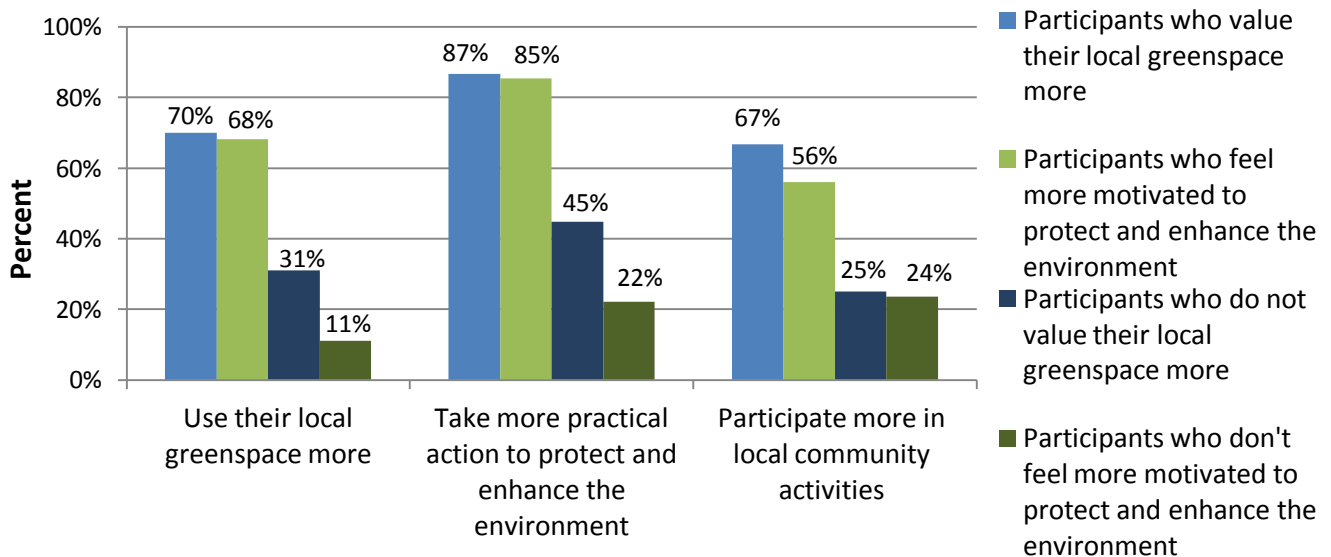
Participants reporting increased understanding were noticeably more likely to use their local greenspace more than those who did not report increased understanding. They were also twice as likely to participate in environmental action and community activities (Figure 5).

Interestingly, an increased understanding of the value of Citizen Science is more strongly linked to behaviour change than is an understanding of the role people can play in environmental protection – and its absence is also more strongly linked to less behaviour change.

5.3.2 Correlations between changes in attitude and changes in behaviour

The relationship between attitude and behaviour change is even stronger than that between understanding and behaviour change. Participants who value their local greenspace more are around twice as likely to have changed their behaviour as those who did not value their local greenspace more. Even more dramatically, participants who felt more motivated to protect the environment were twice, four times or even six times as likely to change their behaviour as those whose motivation hadn't changed (Figure 6).

Figure 6. Correlation between attitude change and behaviour change



5.4 Connection to nature

Connectedness to nature differs from other attitudes, and encompasses a range of experiences and values. For instance, Chen-Hsuan Cheng & Monroe (2010) describe a connection to nature index comprising four elements:

- 1) Enjoyment of nature
- 2) Empathy for creatures
- 3) Sense of oneness with nature
- 4) Sense of responsibility for the environment

The RSPB used this index to guide their 2013 survey of UK children's connection to nature, and other studies have similar indices (Tam 2013).

Connectedness to nature has been linked to environmental behaviour (e.g. Ahnström et al. 2013, Davis et al. 2009, Dutcher et al. 2007, Hines et al. 2008, Gosling & Williams 2010, Rogers & Bragg 2012) and environmental intentions (e.g. Hinds & Sparks 2008).

In keeping with the other attitude changes observed here, 58% of existing Citizen Scientists reported that Citizen Science participation led them to feel more connected to nature. All these participants reported increased understanding across the four areas of knowledge gain. Those who felt more connected to nature were also at least twice as likely to behave more environmentally as those who didn't feel more connected to nature, and reported an even more marked increase in environmental attitudes (Figure 7).

Existing Citizen Scientists who felt more connected to nature:

All better understood

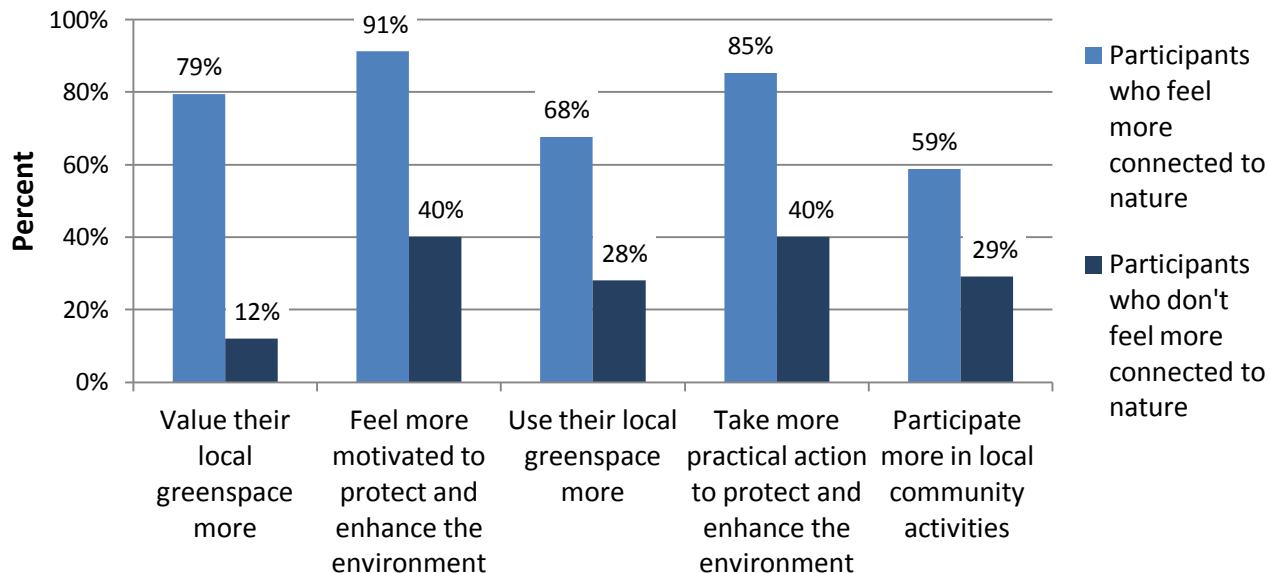
1. The value of Citizen Science
2. People's role in protecting and enhancing their local environment
3. How participating in environmental projects can influence personal health and well-being
4. How their local environment influenced their health and well-being

Were almost **8 times more likely** to value their local greenspace more than those who did not feel more connected,

Were **twice as likely** to feel more motivated to protect and enhance the environment, and

Were **twice as likely** to change their behaviour.

Figure 7. Correlation between connection to nature and attitude & behaviour change



When asked to describe changes in their connection to nature, participants emphasised that changes came from their enjoyment of nature and sense of environmental responsibility (in keeping with the index, above) as well as from increased knowledge through Citizen Science.

5.5 Noteworthy behaviour change correlations

The three factors most strongly linked to behaviour change are connection to nature, greenspace valuation and environmental motivation (Figure 8, below). Interestingly, the absence of environmental motivation is also most strongly linked to the absence of environmental behaviour change. These findings strongly indicate that there is a relationship between behaviour change and a) connection to nature and b) attitude change, but at this point we are not able to determine if this relationship is significant. However, these results are in line with other findings (e.g. Mobley et al. 2010) that demonstrate that attitudes more strongly influence environmental behaviour than increases in knowledge do.

Increased understanding and participating in Citizen Science at least once a month are also closely linked to behaviour change, but less strongly so. Notably, participating in Citizen Science less than once a month is much less strongly linked to the absence of behaviour change than is the absence of knowledge or attitude change. This suggests that even occasional exposure to Citizen Science may result in meaningful attitude and behaviour change.

5.6 Health as a motivator

Citizen Science can include health-related environmental monitoring. We had initially agreed with SEWeb's Public Engagement Officer to try to survey Citizen Scientists in the pilot projects for the Urban Air Quality Citizen Science Programme, which is currently being run by the Institute for Occupational Medicine, the Centre for Ecology and Hydrology, Aberdeen University and TCV Scotland. This was the reason for including specifically health-focused questions, but since those pilots were delayed we were unable to include those participants in this research.

The vast majority of participants did report an increased understanding of environmental influence on health (see Figure 3), but this understanding did not translate into an equally large increase in health-related concern or action. Around a third (36%) of respondents felt more concerned about the local environment's effect on their health, and around a quarter (23%) said they now take more action because of this influence. It is worth noting that a number of respondents found this last question hard to answer, which may have influenced response rate.

Certain attitude changes were more strongly associated with increased action taken because of the environment's influence on health: a higher percentage of participants reporting these changes also took action because of the environment's influence on health. The top four were:

1. Feeling more concerned about the local environment's effect on their health (43%)
2. Valuing local greenspace more (38%)
3. Feeling more connected to nature (36%)
4. Feeling more motivated to protect and enhance the environment (33%)

Figure 8. Summary of factors correlating with behaviour change

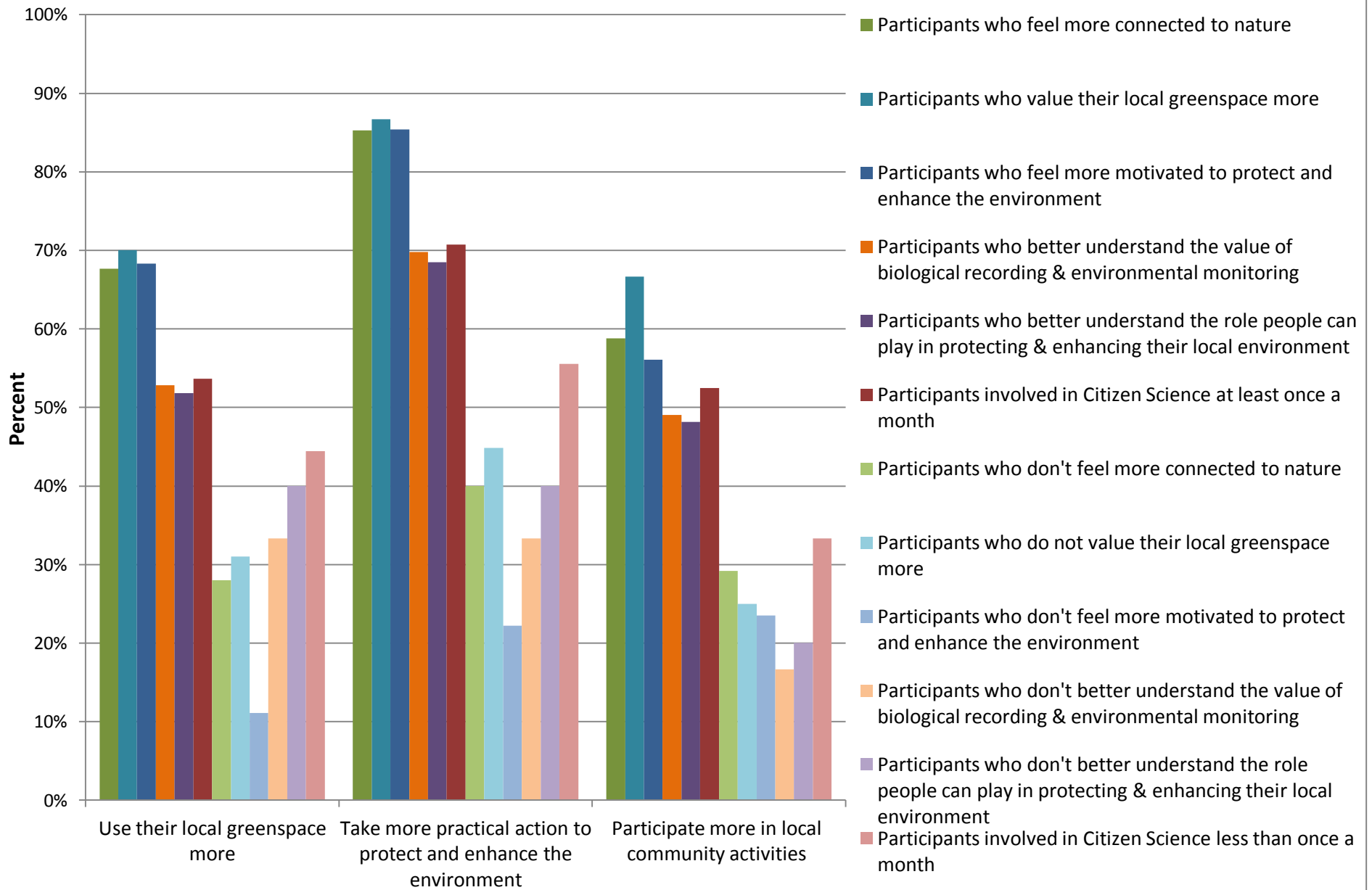
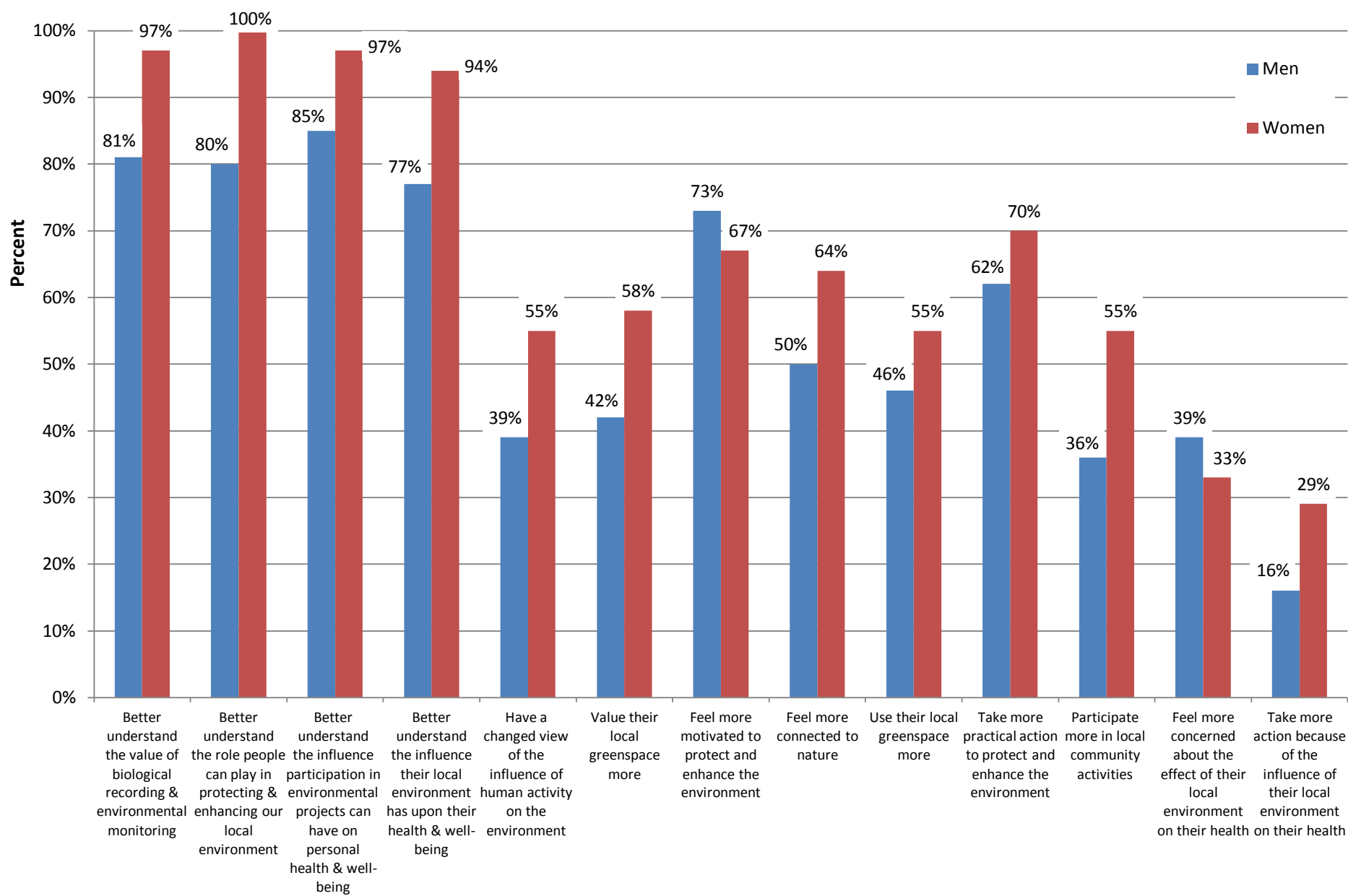


Figure 9. Gender differences in changes in understanding, attitudes and behaviour



5.7 The effect of gender

Interestingly, gender seems to play a role across almost all areas of knowledge, attitude and behaviour change, with consistently more women than men reporting a change. Differences between men and women were greatest with regard to knowledge gain, greenspace valuation, connection to nature and action taken because of environmental influence on health (Figure 9).

The results do not indicate why this is, and there are many possible reasons. For instance, the knowledge increase disparity might be because there are fewer female professionals in the conservation sector, so female Citizen Scientists are more likely to be amateurs and therefore to learn more through Citizen Science. Regardless, these results warrant further research.

5.8 Age-related change

Participant knowledge gain varied little between different age brackets, but there are a few notable divergences in attitude change. A few examples of age-based differences are that older people (those over 65) were:

- Noticeably more likely to participate more in local community activities: 83%, compared to 48% of those aged 41-65 and 37% of those aged 26-40.
- Slightly more likely to report taking action to protect and enhance the environment: 71%, compared to 68% of those aged 41-65 and 63% of those aged 26-40.
- Much less likely to describe themselves as more motivated to protect and enhance the environment: 43%, compared to 76% of those aged 41-65 and 70% of those aged 26-40.

On the other hand, younger people (aged 26-40) were more likely to feel an increased connectedness to nature: 67%, compared to 52% of those aged 41-65 and 43% of those aged 65+. Since connection to nature is strongly correlated with environmental behaviour, this trend is worthy of further investigation, to ascertain both its significance and if the correlation continues with young people such as young adults and children.

5.9 Participants' written answers

The survey for existing Citizen Scientists also included questions asking for written explanations. Through this we hoped to better understand why participants felt that they had gained knowledge or changed attitudes or behaviour – or, just as importantly, why they had not.

Questions on knowledge gain were followed by the request that respondents provide examples: for instance, of how people can protect and enhance the environment. Requests for explanation also followed all questions into attitude and behaviour change, and were neutrally phrased in order not to bias responses. Although exhaustive analysis of these data is outwith the capacity of this study, the following core themes emerged from participants' explanations:

- 1) Participants tended to focus most on health improvements related to mental health and wellbeing. The next most common perceived benefits of nature contact were social benefits – e.g. meeting different or like-minded people – and physical benefits, especially exercise.

“Scotland is very varied in its wildlife and habitats. To see them and watch them often requires walking long distances across rough terrain, such as mountains, which makes you physically fitter. Additionally, interaction with the natural world has a positive outcome for mental well being. I enjoy seeing wildlife, it makes me happy.”

- 2) A notable minority of participants expressed a sense of despair in the face of large-scale human-induced environmental degradation, or frustration that not enough people were acting to protect the environment. A few participants went further, saying that taking part in environmental monitoring had made them too discouraged to continue taking action.

“By getting involved in environmental projects, I've become very aware of the fact that human activity is destroying the environment. In my town alone, UKBAP priority habitats are being destroyed even without planning permission. Now that SNH is no longer able to comment on non-SSSI planning applications, the planning process rarely does anything to mitigate the negative effect of human activity on the environment. I've become more aware of this since I've become involved in environmental projects.”

- 3) Despite this frustration, many respondents emphasised that by engaging with the Citizen Science community they found inspiration and hope for the future.

“The more I understand about the natural world around me the more I wish to look after it.”

- 4) Most respondents were also still motivated to participate in environmental action, and many stressed the value of individual or collective environmental responsibility.

“Nature needs people to champion it.”

- 5) Of the respondents who report that their environmental knowledge, attitudes or behaviour had not changed, the vast majority explained that it was because they were already knowledgeable, already held those attitudes, or were already taking action.

“I've always felt connected to nature; that's why I got involved in the first place.”

- 6) Participants reported using local greenspace in a wide range of ways, with a handful saying that their use had increased as a direct result of Citizen Science activities. Those who valued it more spoke of their increased understanding of greenspace vulnerability, its role as wildlife habitat, or the ways it facilitates learning, social connection or connection to nature.

“I now understand more fully the importance these areas have for biodiversity and are often an oasis for wildlife in an otherwise concrete habitat.”

6. Results of survey of new Citizen Scientists

6.1 Profile of new Citizen Scientists

18 volunteers in TCV volunteer groups filled in the initial baseline survey prior to participating in Citizen Science activities. Of those 18, 16 subsequently participated in Citizen Science and completed the follow-up survey. See the methodology section (5.2.1) for an explanation of implementation challenges.

6.1.1 *Demographics*

Participants were asked to give their gender, age and employment status. The gender ratio was imbalanced, with four women and 14 men, and three women completing the follow-up survey. Age was relatively balanced, with six participants aged 18-25 years old, one 26-41 years old, eight 41-65 years old, and three over 65. Three participants were in part-time employment, three were students, five were unemployed, and seven were retired.

6.1.2 *Exposure to Citizen Science*

Seven out of 18 respondents (39%) had heard of Citizen Science or public monitoring at the beginning of the survey period, and four had participated in Citizen Science activities. All seven reported that they understood the importance of Citizen Science, but only four felt confident to explain its importance to others.

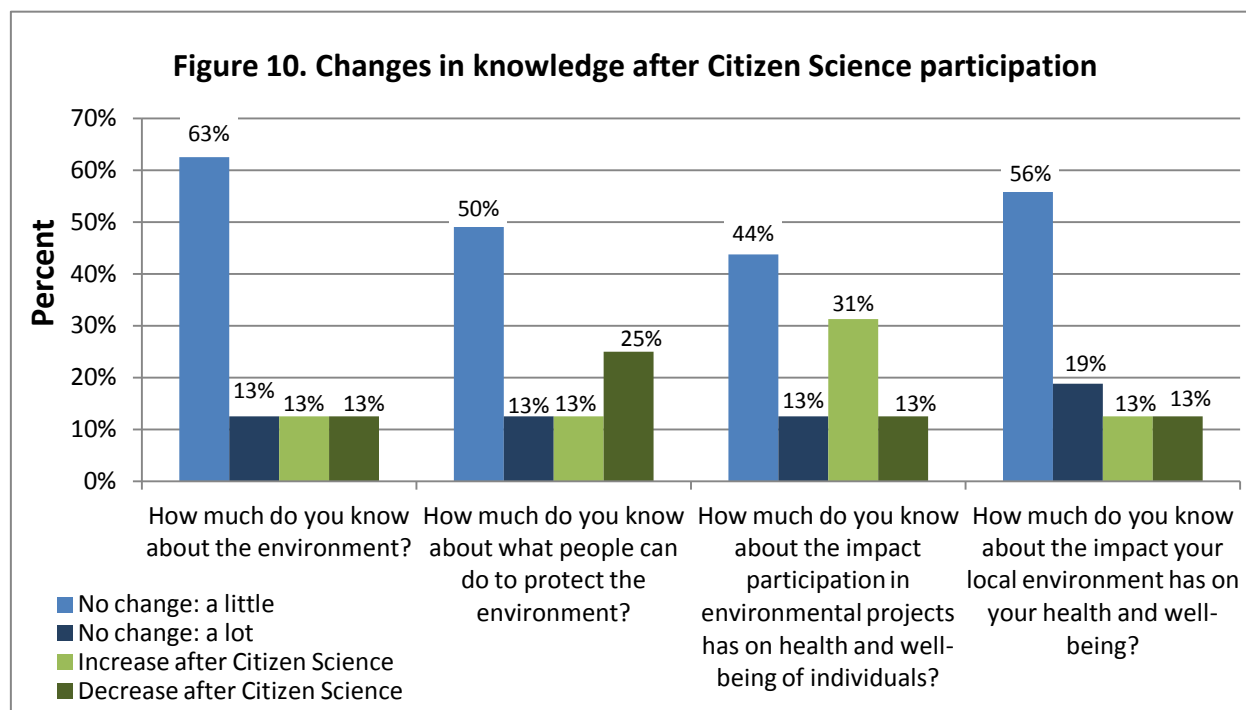
Of the participants who had not previously heard of Citizen Science or public monitoring at the beginning of the survey period, after participating in Citizen Science 100% felt they understood its importance. 78% also felt that they could now confidently tell others why Citizen Science was important.

6.2 Effects of Citizen Science participation

The effects of Citizen Science participation were measured by comparing responses to identical questions on the baseline and follow up surveys. Data from these surveys are mostly presented in pie charts rather than bar charts, to accommodate the increased complexity of responses (i.e. with different kinds of lack of change in responses as well as change).

6.2.1 *Knowledge gain*

Participants were asked about four areas of environmental knowledge. The majority of respondents reported no knowledge change, and those whose knowledge changed showed knowledge loss as well as gain. The biggest knowledge increase was regarding the environment's impact on general health and well-being, where 31% of participants reported an increase (Figure 10). Interestingly, the largest decrease was in the second category, where after Citizen Science 25% of participants reported less understanding of people's role in protecting the environment than before they participated in Citizen Science.



6.2.2 Changes in attitudes and behaviour

Unlike existing Citizen Scientists, the majority of new Citizen Scientists did not report attitude change after participating in Citizen Science. This lack of change held true across all three attitudes: perception of human environmental impact (82%), valuation of local greenspace (63%) and motivation to protect and enhance the environment (75%). (Figures 11-13)

However, the general absence of change revealed that participants consistently expressed pro-environmental attitudes. Both before and after Citizen Science, the majority of participants felt that human behaviour had a huge or considerable environmental impact, and that local greenspace had huge or considerable value. Most participants also consistently felt really or quite motivated to protect the environment, with only 1 feeling only a little motivated.

Participants whose attitudes did change were more likely to see an increase than a decrease in environmental attitudes. However, in all three attitudes a small minority did report decreases. Environmental motivation saw the biggest gain (31%), followed by greenspace valuation (25%).

When asked who should be responsible for protecting the environment, most participants (63%) consistently assigned environmental responsibility to all agents listed. These were:

- Government and local authorities
- Environmental organisations
- Local organisations and communities
- Individuals

Interestingly, this question did not have an 'all of the above' option, but participants chose to tick all four boxes. The remaining 37% chose one or several of these options, but assigned responsibility differently before and after Citizen Science participation with no discernible trend. No participants felt that no-one was responsible for the environment.

Figure 11. Participant perception of the impact of human behaviour upon the local environment after Citizen Science

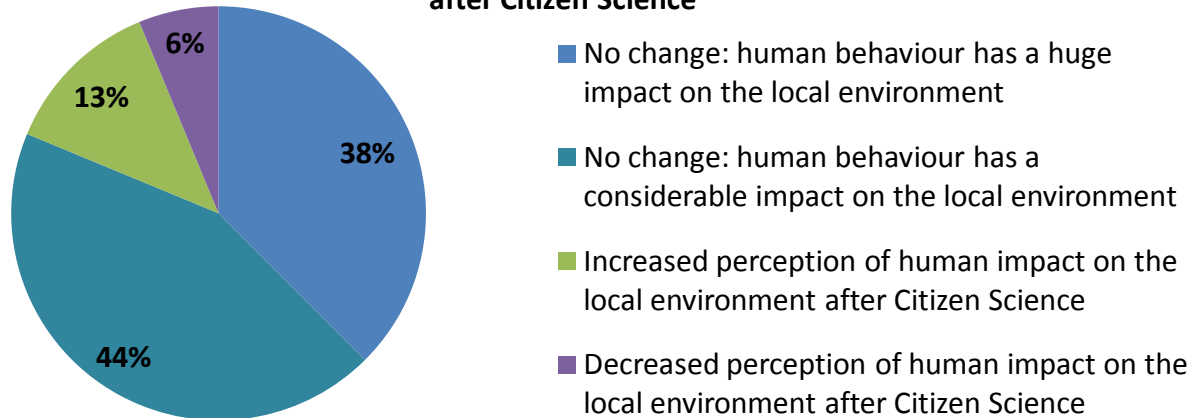


Figure 12. Participant valuation of their local greenspace after Citizen Science

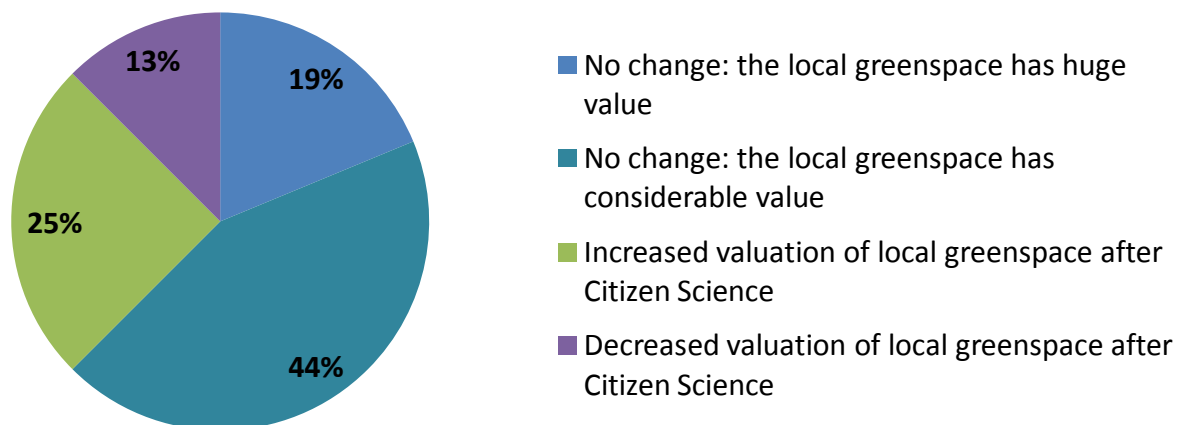


Figure 13. Participant motivation to protect and enhance the environment after Citizen Science

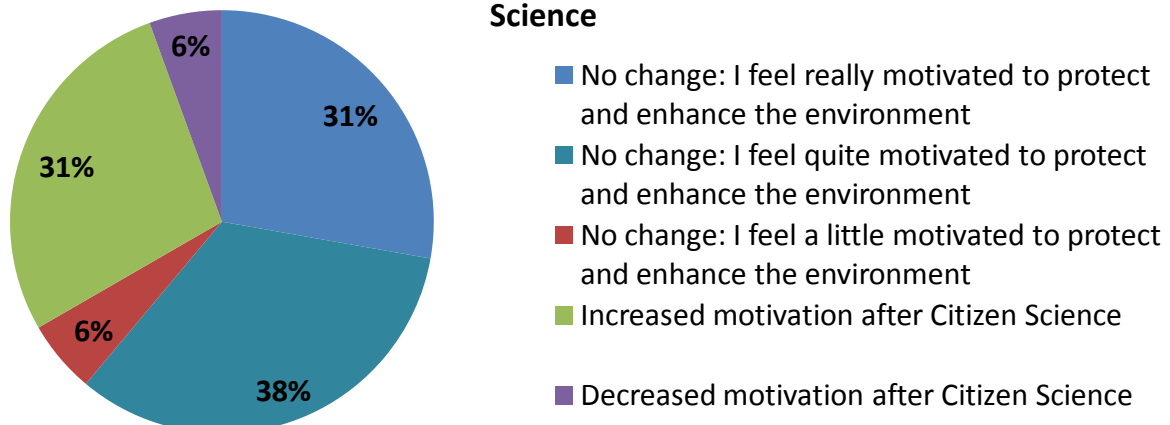


Figure 14. Participant use of local greenspace after Citizen Science

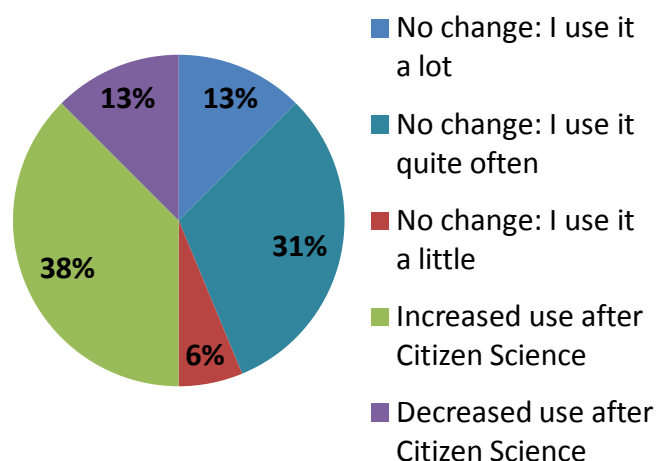


Figure 15. Participant practical environmental action after Citizen Science

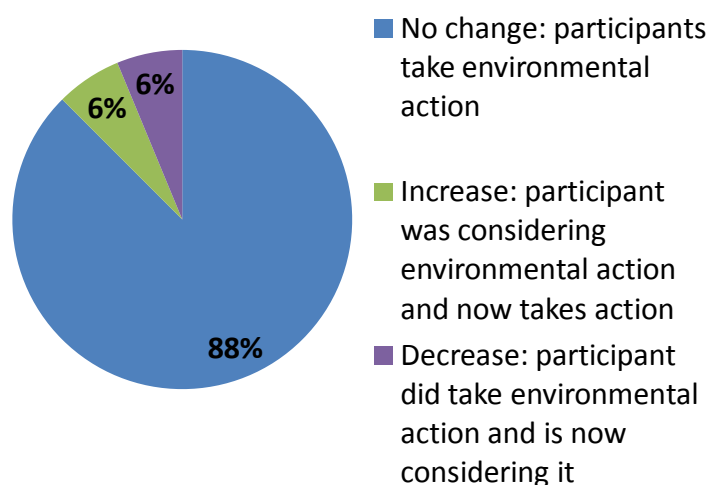


Figure 16. Do participants want to use their local greenspace more after Citizen Science?

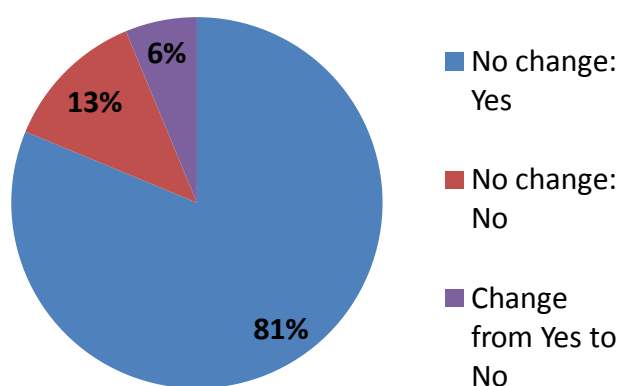


Figure 17. Do participants want to take more environmental action after Citizen Science?

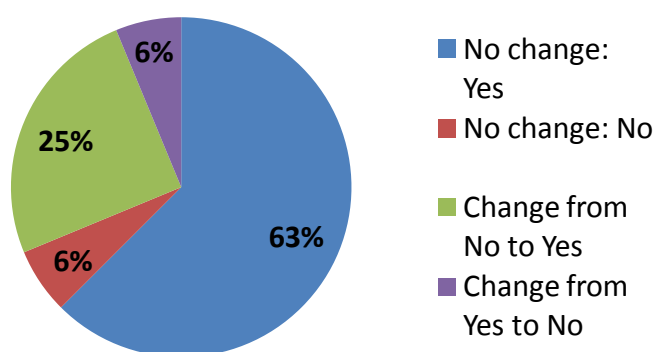
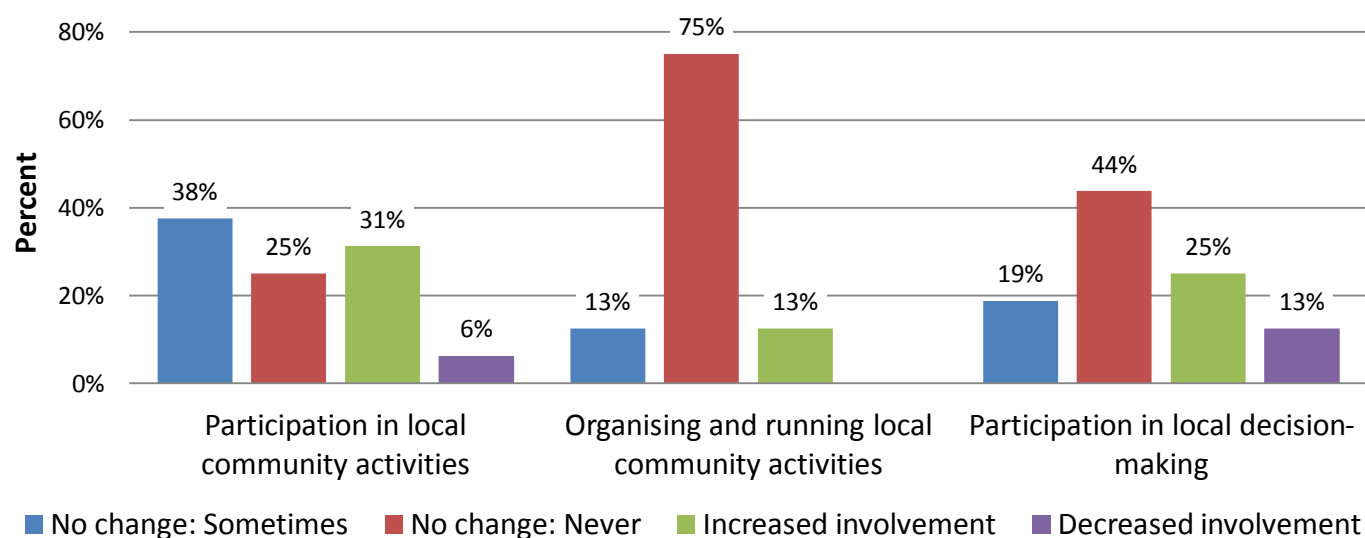


Figure 18. Participant involvement in their local community after Citizen Science



Environmental behaviour also stayed relatively constant, with most participants maintaining a consistently level of pro-environmental action (Figures 14-17). The biggest increase in environmental behaviour was seen in participant use of greenspace, where 38% of participants reported using their local greenspace more after participating in Citizen Science. This increase was despite only 25% reporting that they valued their local greenspace more. Only one person, however, changed their mind about whether they wanted to use local greenspace more.

The opposite was true in regards to participants' level of practical environmental action: the vast majority (88%) reported taking action both before and after Citizen Science. After participating in Citizen Science, however, 4 of these participants (25% of total respondents) wanted to take even more environmental action than they currently took.

The majority of participants did not change their level of community action after taking part in Citizen Science (Figure 18). However, a noticeable minority (31%) did report participating more in local community activities, and 25% also participated more in local decision-making.

6.3 Connection to nature

Almost a third of participants reported an increased level of connection to nature after participating in Citizen Science, but 13% reported a decreased level of connection (Figure 19, below). This is noticeably different to the increase observed in the existing Citizen Scientists survey, where 58% of participants reported an increase connection to nature and none reported a decrease. This might be because in the new Citizen Scientists survey the short time period allotted to the survey precluded long-term, sustained involvement in Citizen Science activities.

6.4 Health as a motivator

Unlike with the existing Citizen Scientists, some of the biggest changes amongst new Citizen Scientists were in regards to health. After taking part in Citizen Science, 44% of participants reported an increased concern about the environment's impact on their health, and 38% reported taking more action because of the environment's impact on their health (Figures 20 and 21).

After participating in several sessions of Citizen Science activities:

38% of participants increased their use of local greenspace.

81% of participants continue to want to use their local greenspace more.

88% of participants continue to take practical environmental action.

25% of participants had decided they now want to take more environmental action than they already took.

31% of participants took part in more local community activities.

After taking part in Citizen Science:

69% of participants still wanted to be more connected to nature. This was in spite of the fact that all but one also reported consistently feeling "quite" or "really" connected to nature.

19% of participants had decided they now want to be more connected to nature.

This suggests that Citizen Science might have a role in increasing participant desire for connection to nature, as well as increasing or maintaining participant connection to nature.

Figure 19. Changes in participant connection to nature after Citizen Science

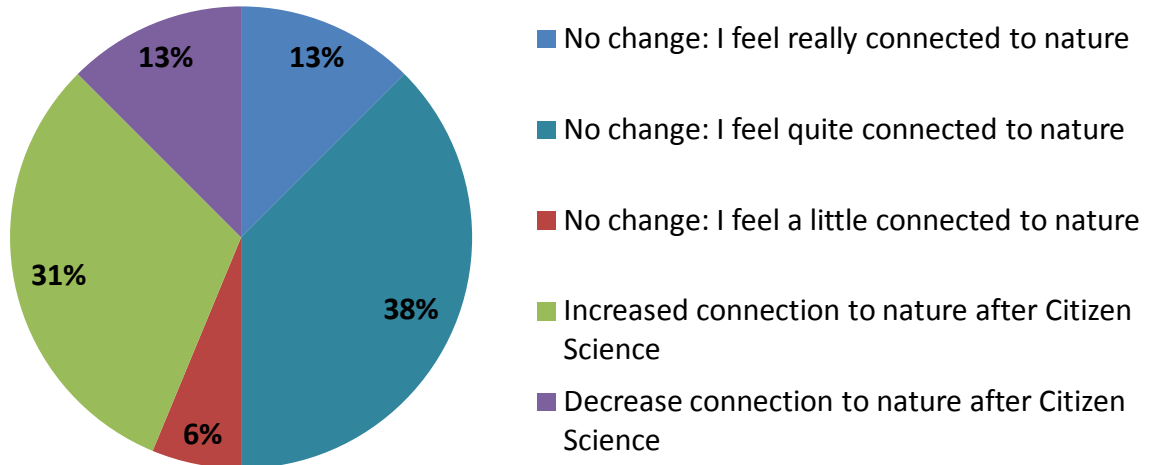


Figure 20. Participant concern, after Citizen Science, about the local environment's impact on their health and well-being

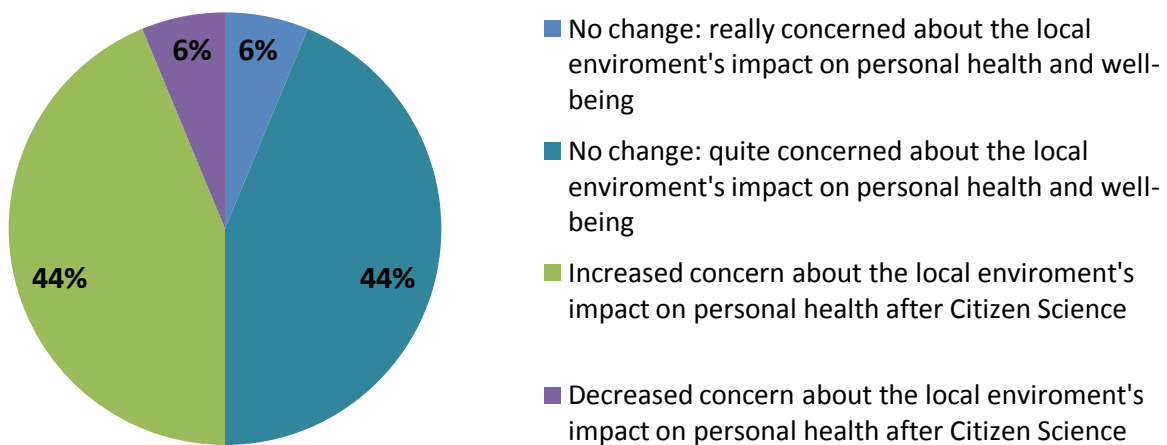
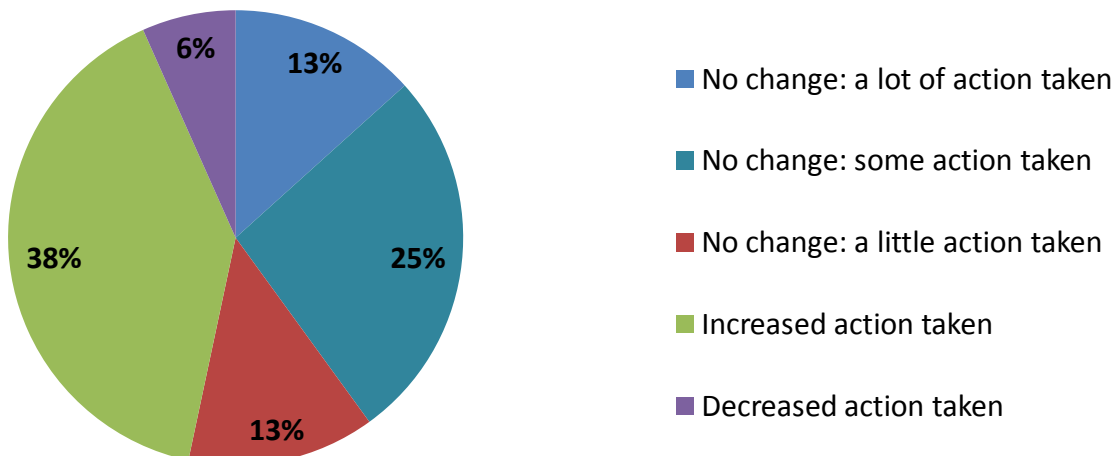


Figure 21. Participant action, after Citizen Science, taken because of the environment's impact on their health and well-being



6.5 Correlations with attitude and behaviour change

Given the small sample size of the new Citizen Scientists survey, and that in many cases the respondents showed no change over the survey period, we have not analysed these survey data for correlations between understanding, attitude and behaviour change. We have also not investigated gender or age based trends, again because of small sample size. Possible trends in these areas warrant further investigation, but were beyond the scope of this study (see sections 6.3, 6.7 and 6.8 for analysis of these correlations in existing Citizen Scientists).

6.6 Participants' written answers

Both surveys for new Citizen Scientists included frequent questions asking participants to explain their answers. Through this we hoped to better understand participants' perceptions of their knowledge, attitudes and behaviour, and if these perceptions changed or not.

Questions on knowledge change were followed by the request that respondents provide examples: for instance, of how people can protect and enhance the environment. Requests for explanation also followed all questions on attitude and behaviour change, and were neutrally phrased in order not to bias responses.

Many respondents did not answer the same questions in both versions of the survey, and some provided no written explanations at all. Those who did tended to give similar answers both before and after Citizen Science.

The following core themes emerged from participants' explanations, many of which overlap with those observed in existing Citizen Scientists. Although extensive analysis of written responses was outwith the capacity of this investigation, in general it seems that participants:

- 1) Are aware of a range of ways people can protect and enhance the environment, and find personal benefit from participating in environmental action.
- 2) See participation in environmental action as having mental, social and physical health benefits.
- 3) Find their local greenspace to have a range of values for people and nature and themselves enjoy using it for various activities such as walking.
- 4) Describe connectedness to nature as being linked to feeling enjoyment when spending time in the outdoors and feeling a sense of oneness with nature (see the connection to nature index described in section 6.4).
- 5) Express a sense of concern about human-induced environmental degradation, and consistently ascribe responsibility to all environmental actors – from individuals through to Government.

What do participants feel they gain from taking part in Citizen Science?

The majority of respondents stressed that their understanding of the environment increased as a result of Citizen Science.

13 respondents answered the question "As a result of your participation in Citizen Science, what changes have resulted for you?"

9 emphasised the resulting increase in their environmental understanding, with **1** also noting how this had increased their motivation to protect wildlife. **1** described feeling healthier, and **1** now wants to volunteer outside their local area. **2** felt there was no change.

7. Recommendations for SEWeb and partners

7.1 Recommendations on behaviour change through Citizen Science activities

We recommend that SEWeb and partners:

1. Acknowledge at a strategic and policy level the potential of Citizen Science to influence substantial change in attitudes and behaviour.
2. Increase the profile of SEWeb's promotion of connection to nature and Citizen Science.
3. Facilitate easier transitions between Citizen Science activity and further activity to:
 - a) Protect and enhance the environment
 - b) Use local greenspace, and
 - c) Participate in local community activities.
4. Actively promote regular Citizen Science activity (i.e. participating at least once a month) in order to maximise attitude and behaviour change.
5. Actively promote long-term engagement in Citizen Science to achieve maximum impact on attitude and behaviour change.
6. Support volunteers already engaged in practical environmental projects to actively participate in Citizen Science.

7.2 Recommendations on SEWeb as a gateway and focus

We recommend that SEWeb and partners:

1. Continue to engage new audiences with Citizen Science. The results of this research indicate that Citizen Science has immense potential to influence change. To achieve this, Citizen Science and SEWeb both need to become more accessible to communities that have not traditionally participated. This includes providing many different ways for people to access SEWeb and get involved.
2. Consider carefully how calls to participate in Citizen Science are communicated, bearing in mind that Citizen Science has relevance as a vehicle for a range of benefits. These include:
 - Improving mental well-being
 - Boosting physical health
 - Strengthening social connectivity
 - Providing opportunities for learning and knowledge-sharing
 - Providing opportunities to enjoy the outdoors
3. Provide facilities on SEWeb for people to raise environmental concerns, and where appropriate bodies will respond to those concerns.
4. Create a larger, more prominent space on SEWeb in which to share the experiences of real people. The written responses from these survey participants are often humbling and inspiring, and give life to Citizen Science activities and its effects.
5. Recognise and celebrate volunteer contribution to monitoring and environmental action. This would not necessarily be to reward-focused, but rather to inspire others to join in.
6. Promote opportunities for connecting to nature, even if no Citizen Science or environmental action is involved.

7. Actively promote and invest in projects that link health and environmental citizenship.
8. Explore SEWeb's potential to play a coordinating role for partner groups through a range of communication platforms, including expanding its ability to work outside the internet and foster more links with people on the ground. SEWeb will be more effective if it develops a broader, non-digital network of grassroots and community opportunities for people to engage with the environment and connect to nature.

7.3 Recommendations for future research

This project, particularly the literature review, has drawn attention to several significant gaps in the research on Citizen Science. We recommend that SEWeb and partners consider ways in which they can promote or facilitate research that investigates:

1. The statistical significance of the data gathered here.
2. The effects of group-based Citizen Science participation, perhaps including a control group, who do not take part in expert-led Citizen Science, as well as a variable group that work with an expert.
3. The effects of long-term, intensive engagement in comparison to short-term or casual engagement in Citizen Science.
4. The effects of participants' motivations for Citizen Science participation on attitude and behaviour change.
5. Participants' actual behaviour change, rather than reported behaviour change.
6. Which specific Citizen Science activities have the most potential to influence behaviour and attitude change. Similarly, it would also be useful to research the changes in knowledge, attitudes and behaviour amongst participants carrying out environmental monitoring in comparison to biological recording.
7. The correlation between gender and changes in attitude and behaviour.
8. Attitude and behaviour changes in Citizen Scientists younger than 26 and older than 65.

References

- Ahnström, J., J. Bengtsson, Å. Berg, L. Hallgren, W.J. Boonstra and J. Björklund (2013). Farmers' interest in nature and its relation to biodiversity in arable fields. *International Journal of Ecology* Article ID 617352.
- RSPB (2013). *Connecting with nature: finding out how connected to nature the UK's children are*. RSPB: Sandy.
- Chen-Hsuan Cheng, J. and M. C. Monroe (2010). Connection to Nature: children's affective attitude toward nature. *Environment and Behavior* 44(1): 31–49.
- Davis, J. L, J. D. Green and A. Reed (2009). Interdependence with the environment: Commitment, interconnectedness, and environmental behavior. *Journal of Environmental Psychology* 29(2): 173-80.
- Dutcher, D. D., J. C. Finley, A. E. Luloff, and J. B. Johnson (2007). Connectivity With Nature as a Measure of Environmental Values. *Environment and Behavior* 39(4): 474-93.
- Hinds, J., and P. Sparks (2008). Engaging with the natural environment: The role of affective connection and identity. *Journal of Environmental Psychology* 28(2): 109–20.
- Hine, R., J. Peacock and J. Pretty (2008). Evaluating the impact of environmental volunteering on behaviours and attitudes to the environment. University of Essex.
- Gosling, E. and K. J. H. Williams (2010). Connectedness to nature, place attachment and conservation behaviour: Testing connectedness theory among farmers. *Journal of Environmental Psychology* 30(3): 298-304.
- Mobley, C., W. M. Vagias, and S. L. DeWard (2010). Exploring Additional Determinants of Environmentally Responsible Behavior: The Influence of Environmental Literature and Environmental Attitudes. *Environment and Behavior* 42: 420-447.
- Rogers, Z. and E. Bragg (2012). The power of connection: sustainable lifestyles and sense of place. *Ecopsychology* 4(4): 307-318.
- Tam, K. (2013). Concepts and measures related to connection to nature: Similarities and differences. *Journal of Environmental Psychology* 34(10): 64-78.

Annexes

Annex A. Written answers from existing Citizen Scientists

Please give us examples of how people can protect and enhance the environment.

1. Review planning applications in their local area and assess whether they are likely to have an impact on wildlife or if there are opportunities for enhancement. If so contact Councillor, MP
2. Submit biological records to a Records Centre. All biological records have value, even negative ones e.g. searching historical sites for species and finding none there.
3. Join an environmental organisation
4. Conservation volunteering
Be more aware of the impacts of actions such as littering, river pollution incidents, removal of natural habitats, development in sensitive areas, work with your community to foster an interest in protecting the natural environment
By becoming actively involved in your local environment, you can develop a sense of understanding, ownership and responsibility that is transferable to environmental issues further afield.
By encouraging wildlife into their own gardens
By helping with projects such as monitoring wildlife and also things such as footpath maintenance, removing invasive species, educating other people about the environment.
By looking after stalled spaces in cities.
By creating community gardens where local residents can meet and participate in looking after the environment together.
By recycling litter and planting insect friendly plants in their gardens. By taking part in community projects such as litter picking.
By taking an active role in management and providing information
By taking ownership for their local community and getting involved in local projects.
By understanding that nature is not uniform and neat and that clearing scrub and planting 6 leylandii in a SSSI woodland to 'tidy the place up a bit' IS NOT enhancing the environment!
Choose greener alternatives such as public transport, organic food etc. Recycle. Participate in local conservation work.
Conservation Volunteering
Take up gardening/ Improving greenspaces such as gardens, balconies etc. and start to grow own vegetables/ flowers/ fruit
Create habitats for different species (e.g. log piles, rockeries, bog/ pond/ wetlands, hedges etc.)
Provide food sources for different species (feeders, planting specific types of food plants)
Keep environment tidy (not only for amenity reasons, but also because rubbish poses a risk for many species such as birds as they sometimes mistake it for food, but can't digest it and sometimes die from the effects)
E.g. by helping to reduce our impact on the environment - e.g. preventing littering & pollution from household chemicals; by participating in local clean-ups, learning and passing on knowledge about local natural heritage and wildlife, helping to monitor and report changes in species distribution and abundance, changes in pollution levels; working to help people connect in meaningful ways with the environment and issues around sustainable use of green spaces.
Following on from monthly beewalk surveys - volunteers are interested in gardening for pollinators. Following on from running two big butterfly counts with volunteers, some were interested to know what butterflies were in their own gardens and why. Awareness has been raised as the role moths play in terms of pollination and their importance in the bigger picture of biodiversity. Forging links with Forth River Fisheries Trust and introducing volunteers to helping eradicate non native invasive plants in Fife.
Gathering records from a greater area than conservation organisations could survey on their own.
Recording change over time which could identify areas or species at risk.
Get involved in activities run by local organisations such as environmental records centres, wildlife groups, conservation volunteer organisations. local 'Friends of' groups, and local authority countryside rangers (bioblitzes, excursions, training courses, work parties)
Have fewer children, reducing the rate of population growth and the resultant pressure on the natural environment.
Help monitor spread of invasive species.
I am involved in marine citizen science. We have several surveys such as the Shore Thing and Sea Life Survey that impress upon people the importance of the marine environment but also harmful effects such as litter and the importance of

removing litter before it gets in the environment
Joining groups to remove Himalayan Balsam from our riverbanks, clean up streams and riverbanks, volunteer to take part in a cleanliness survey of the River Tyne.
Knowledge of where things are helps to protect areas or bring them in to suitable management
leave an area of your garden rough for the wildlife. plant insect friendly plants. don't pick wild plants. share information with others eg, bugslife. join groups. preserve wildlife corridors eg dry stone walls. go on courses. educate yourself
Leaving gardens messy. Fewer insecticides and chemicals in general. Have a pond. Use less water and energy. Purchase sustainable and/or local produce.
Less pollution, more recycling
Lobbying, work parties, domestic gardens
Local knowledge and awareness of issues and change. More manpower than the increasingly depleted public and academic side cannot supply. Amateur expertise - often under-rated by professionals. Eg decades of recreational diving with the Marine Conservation Society demonstrates diver surveys making a huge and vital role which professionals could never equal - leading to Gov.t policy changes and hopefully MPAs. Contact Chris Wood at MCS for more info.!
Looking after local habitats to make sure wildlife can thrive.
Looking after rivers and their banks.
Managing the garden in a wildlife friendly manner, following the countryside code, managing habitats for wildlife
Monitoring population changes of rare and potentially vulnerable species is one way that people can get involved. Monitoring environmental indicators such as lichens. Monitoring the spread of diseases.
Monitoring invasive species.
My group got together to lobby for a site to be made a Local Nature Reserve, thus affording it increased (but non-statutory) protection from development. We enhanced the environmental value of the site by implementing various habitat improvement projects.
not dropping plastic and other litter, growing wildlife friendly plants
Noting unusual development patterns in urban areas, local council failing to manage harm to local wildlife and. Trees etc Farming and landowners a abuse of pesticides, Discharge of unsuitable materials into water courses
Pass on records of animal and plant species to give a better idea of actual distribution, rarity, etc
Practical conservation volunteering, Gardening for wildlife, Recording nature
Pressure government to adopt more environmentally friendly policies.
Biological recording provides evidence that can underpin an argument to change existing government policy (e.g. species response to climate change) or prevent development of land (e.g. protected species).
Providing real data to inform species knowledge to contribute to national understanding of populations, effects of climate change etc.
Record distribution of rare, endangered or threatened species which would otherwise not be considered in policy due to lack of resources of statutory agencies
Record wildlife and submit these records to Local Record Centres. Get involved in their Local Biodiversity Action Plan. Plant native species in their gardens and other wildlife measures such as pond creation. Volunteer to help out with habitat creation and/or management.
Reduce, reuse, recycle. Garden in a wildlife friendly manner. Buy local food, get involved in conservation volunteering.
Removal of invasive species. Providing habitats for wildlife
Simple recycling and not littering.
Specifically related to recording invertebrates in rivers on a monthly basis we are able to pick up pollution (and other) events more frequently and across a wider area than EA. Visiting the river on a regular basis collecting long-term data on temperature, flow and geomorphology aids understanding for all.
SWT in Stirling gather records to inform conservation decisions. We monitor perhaps 30 sites a year and we have tried to improve the survivorship of the wildlife by i) removing competing vegetation, ii) growing and planting out rare plants or the food plants of rare inverts iii) informing owners or conservation bodies and encouraging them to take action. Come to our meetings and find out.
Taking ownership of an area. More people using an area more encourages more people to use and makes people feel safe
Things like complaining about unnecessary verge cutting, tree felling etc. Objecting to damaging/unsuitable building applications. Volunteering with environmental organisations. Making private gardens more attractive habitats for wildlife.

Replacing hard/impervious surfaces from gardens and replacing with something porous.
Through collective action help each understand their local environment, plan activities and protect / enhance the environment as a mutual benefit - both for us as humans and the scarce resource of our life sustaining environment.
treating INNS, biological recording to put conservation projects into place
Undertaking ecological surveys to identify habitats and species present to make informed decisions regarding environmental management. Liaise and work with landowners to educate about environment and consequently tailor land management to specific habitat and species.
Where to begin? Consider type of plants used in garden, decry non-native species and F1 hybrids. Desist from concreting and paving over garden. Join Conservation societies and actively participate. Join a recording scheme. Use your digital camera to record the natural world around you. Vote for the Green Party. Complain about unnecessary roadside and verge cutting. Contribute to the argument about sustainable farming. Educate school children about nature (attend schools if invited and you have the appropriate knowledge and clearance). Continue to limit smoking.
Avoiding litter; removing litter; monitoring and reporting of invasive or alien species of flora and fauna; looking at tree health and reporting suspected diseases.
Use less energy, Eat less meat, Recycle, Write to elected representatives about environmental issues, Buy locally
Volunteering for work on local nature reserves. Providing data that can influence planning inquiries: e.g. participating in Garden Bird Survey, Wetland Bird Survey, recording local moths and butterflies.

Please give us examples of the influences participation can have on health and well-being of individuals.

A scientist will know that without a control you cannot be sure that environmental projects are responsible to improved health ... but we hope it does. It can have an adverse effect. I do know examples of lifelong field naturalists who attribute joint problems to a life of walking over uneven ground.
A student how took part in surveys virtually every day for 2 months this summer lost 3 stone in weight ... much more spectacular the Weight Watchers
A walk through a wildflower meadow or an old native woodland is an inspiring activity and a real benefit to health.
Being in touch with nature is vital to maintaining a healthy body and mind.
Being out in the fresh air gives you physical exercise and it can help you mentally as well by experiencing the beauty and unpredictability of nature
Being outdoors generates a feeling of fitness, being active and engaging in a worthwhile activity e.g. tree trail walks, BBC Summer of Wildlife, walking trails
being outdoors, appreciating nature, positive experiences
Being outside and active is important for well-being
Being part of a team of like-minded people which encourages social interaction. Working outside and keeping active promotes a feeling of well being.
Contact with nature. People contact. Mental health. Improve fitness. increased exercise
Contact with the outdoors and green spaces improves mental health. Being physically active. Good to have a "reason" to be outdoors - sometimes people wonder why you are going for a walk if you don't have a dog!
Ecotherapy
Encouraging people to get outside!
exercise from walking about for the survey, well being from being in the fresh air looking at nature
Feelings of self worth by contributing to worthwhile action. Being able to continue put one's own lifetime's experience and expertise to good use. Benefits of exercise. Social contacts widened and enjoyed - thus greater happiness.
For many within our recording group our meetings are the only time that they engage with the outdoors, share time within a group environment and develop themselves personally with new skills
General well being and if outdoors general health
Getting out and about - fresh air and exercise. Opportunity to learn something new - good for mental health. Opportunity to meet new people - develop social skills.
Getting out-doors for regular walks
Getting outdoors regularly can improve your state of mind
Getting outside and being active is beneficial to physical and mental health.

Health - not sure - biological recording doesn't tend to involve much activity compared to simply going for a walk in the countryside. You move very slowly when you are recording wildlife. Well-being - meeting people who share your interests, deriving satisfaction from learning new survey skills and improving species identification skills.
Improved mental health and self esteem by taking part. Increased social interaction by working with others. Improved physical health and fitness by taking part in practical activities.
Increases self confidence. Helps provide a therapeutic space to de-stress. Gives people a purpose. Provides inspiration for creativity. Enables people to consider various career and training options. Fosters inclusivity. Augments people's fitness Provides a level playing field for people to come and meet/work together from various walks of life (mixed abilities, ethnicities, social demographics and ages).
Individuals need to interact with others to sustain their own mental health. In the working environment there is not always sufficient time to communicate and build up healthy relationships with others. Once out of the work environment there are less constraints on communication and interactions are less formal. Also for those individuals not in a working environment one of the first things lost is the sense of a community and this can lead to a loss of confidence. Participation in projects involving others sustains mental well-being, builds confidence and counteracts depression.
Interaction with others, increasing social contact. Life is better when you are better informed. Gets you out and about, so keeps you fitter. A healthier environment is better for all.
It makes you feel good that you have contributed, you met new people with similar interests and you might get some exercise.
Makes you feel awesome
Making friends, getting exercise both in body and mind.
Many gain a sense of achievement and involvement from completing tasks.
Many individuals have reported a big improvement in their mental and physical health.
Mental stimulation leading relaxation and exercise
More exercise, more vitamin D, contact with other, like minded people. Renewing the connection with the natural world. Fresh air in lungs! The smells, good and not so good, of the outdoors.
More fit due to fresh air and exercise. Better relationship with nature and their surroundings. Uplifting and relief of stress. Better understanding of the natural world.
Out and about, fresh air, exercise, healthy eco-systems (water, air, food etc).
Outside learning is key. We have evidence from community projects engaging with hard to reach groups
Participants feel part of something bigger, which can contribute to tackling mental health issues.
Participation in environmental projects can often have a detrimental effect, particularly on mental health. Often environmental projects require working with local authorities, whose employees frequently don't have the capacity to manage projects and work in any coordinated fashion with charities (or each other!). This often leads to environmental projects going nowhere. I've seen community members in tears as a result. In principle though, participation in environmental projects should benefit people. I've rarely seen this though. Also worth mentioning is a day I'll never forget: working in a Green Gym event where BTCV supplied all the workers with blunt saws. That was one of the least pleasant days of my life!
Physical activity/exercise. Fresh air, mental well being, spiritual well being
Provides regular exercise, Meeting and interacting with lots of different people
Reduce stress, Improve confidence, Improve mood, Help with weight loss, Help with depression
relaxing days out, sleep better, eat well, learn which plants to plant for health, share information, make friends, join groups
Scotland is very varied in its wildlife and habitats. To see them and watch them often requires walking long distances across rough terrain, such as mountains, which makes you physically fitter. Additionally, interaction with the natural world has a positive outcome for mental well being. I enjoy seeing wildlife, it makes me happy.
Sense of worth and value. Meeting other like-minded people and opportunity to grow related interests. Fresh air. Physical effort in walking to sites and activity e.g. tree planting and revegetation work etc.
Social. Learning. Exercise. Community.
Spending time doing outdoor activities keeps you fitter and healthier, and improves mental wellbeing.
Spending time outdoors, being physically active and socially engaged (e.g. in a group project) can all have enormous benefits on physical and mental wellbeing. Feeling connected with the environment and doing something useful both in terms of conservation and generating valuable scientific data can also greatly enhance an individual's confidence and sense of self-worth. (I'm probably biased as I lead walks and workshops for children and adults using environmental activities, games and

citizen science projects to connect people with the environment for health and wellbeing.)
TCV at national and local level is a great example, both from general conservation volunteering and from in particular the Green Gym. On a less formal level, going out for the day or half day with a local conservation group and doing projects such as wildflower meadow management, rhody bashing, tree planting.... just a few examples ... is great for promoting positive mental well-being, overall fitness and general wellness, through getting out in the fresh air, doing something useful & valuable, and (almost most importantly) having a laugh with like minded people. There's nothing better!
The "green gym" effect as well as "social prescription" - improving fitness by becoming more active and improving mental / social health through joint activities with neighbours or like minded individuals
Working together with like minded people and seeing a genuine improvement after our work. Showing children what we do and exciting them about their local environment so they will be encouraged to join in.
Can improve mental health and be uplifting. Can contribute to weight loss. Can contribute to strengthening muscles. Can help to achieve or add to the amount of recommended physical activity.
Participating in voluntary work on reserves or carrying out surveys can provide healthy exercise and relief from the stresses of work and everyday living.

Please give us examples of the influence your local environment has on your health and well-being.

A cleaner, healthier environment means you are more likely to get out and enjoy it.
An appreciation of the inter-dependence we have as part of the bio-diversity rather than just a passive beneficiary. Gaining insight into the fact that all things live and relate even though "steps" away and all work to sustain the wider communities' capacity to be alive.
Being outside is good for the soul!
Biodiverse green spaces are exceptionally relaxing. Few things relax me more.
Clean water and air and flourishing natural habitats are good for wildlife and for mental wellbeing
Contaminated land, from heavy metals, can affect the well being of local people who come into contact with it. The provision/retention of local green spaces allows easier access to wildlife which enhances peoples enjoyment with consequences for over all well-being
Daily dog walks along my local rivers. Good for my physical, mental and spiritual health, and sociable too.
Enjoyment of fresh air and exercise in natural surroundings on land or in the sea, - make me feel happier. Being able to improve those surroundings helps to counteract the negative feelings that we are losing so much biodiversity.
Everyone wants to live in a nice environment. Likely to be happier if you live somewhere that you perceive as being nice, it lifts your mood. By doing survey work you can see how much life there is in areas here you might not expect it, so it can make you value places more.
Feeling good, happy, relaxed as opposed to anxious, fed-up etc
Getting out into the countryside helps relieve stresses of working in the city and improves fitness.
Good environments usually lead to a better sense of responsibility and desire to keep them that way.
Greater awareness of the local nature on my door step. Learning opportunities regarding ecology. Personal fitness and opportunities to take on new challenges. Opportunities for play and creativity. Enables daily engagement with the great outdoors. Increased confidence in self and others. Tool to meet people from different backgrounds and ages. Opportunity to share and build relationships. Just nice to be outside!
Green spaces and wildlife are a source of enjoyment. They also provide a range of other ecosystem services.
Green, so peaceful and relaxing. The humbling experience of standing under ancient trees. Open space in which I can feel my soul expanding. The utmost joy I feel in watching birds or seeing a harebell managing to grow in some inhospitable place. I couldn't survive if I were surrounded by concrete and feel deeply privileged to live in the country, where the natural world is all around me.
Healthier diet and outlook
I always feel good if I have been outdoors, particularly walking or running. It is also good to see the local wildlife.
I am part of a number of food growing projects and this summer I have had loads of fruit and vegetables to enjoy.
I have been doing voluntary conservation work on and off for the last 30+ years and I know how much better I feel after doing an activity. However, having access to my local park, and having the opportunity to join in tree planting, creating a wildflower meadow, or doing a river clean up, or just being able to cycle through it safely to my allotment or to visit shops and friends,

promotes a great sense of belonging and good health.
I know getting outside and doing physical tasks helps my strength and makes me feel glad to be alive. Mixing with others bolsters my confidence and underlines my feeling of self-worth
I regularly go for walks and ID species I see along my route. It increases my awareness of species and species ID skills.
I walk more and seek out the peace and calm from certain areas
I walk, run and cycle in the greenspaces in and around Edinburgh and find this vital for my own mental and physical wellbeing. There is a meditative quality to being outdoors in the natural environment that no gym can provide - and it is free, sustainable and always varied.
If it's nice and pretty I am happy
Improves mood, fitness, happiness
Living in a lovely valley with a variety of walks, woods and riverbanks means that there are many opportunities to get out and about for walks and cycling.
Making me feel happy to live in a beautiful and biodiverse place. Opportunities to walk and cycle safely.
My local environment is very quiet and peaceful. It's good to have somewhere quiet to go to when I'm feeling stressed.
Often has a calming influence.
Overbearing and grasping supermarkets, limiting choice, close local business, pressurise farmers. Maintenance of local parks and nature reserves. Inappropriate siting of industrial complexes (not a problem, where I live). Wind farms.
Physical activity/exercise. Fresh air, mental well being, spiritual well being. fun with my dog
Planning green spaces, paths, roads, sports facilities etc. Protecting wild places and allowing access to the public.
Interpretation of wild spaces, habitats and species.
Protection of pollinators as to the future of foods which will be available to provide a balanced diet
Relaxation, education, discovery
Sense of space and calm, inspiration and awe. Equally sense of frustration at sites of littering and vandalism but hope in that many like-minded people start to influence and educate others.
Through understanding air quality in urban areas
Trees make me happier than housing estates and people
Trees producing oxygen, and nature improving mental wellbeing
When the area looks better it makes us feel better.
It has been shown that access to greenspaces leads to improvements in many aspects of physical and mental health.
Spending time in the outdoors helps me to release stress and tensions. I find it uplifting and rewarding. I also enjoy activities in the outdoors to improve my physical fitness by cycling, walking and hiking. I am lucky to live in an environment with nice woodlands.
This presupposes you didn't know in the first place.... most people i know who are involved in this sort of thing are perfectly aware of the benefits.

If you answered Yes [to the question: Has your view of the influence of human activity on the environment changed?] please tell us how your views have changed.

By getting involved in environmental projects, I've become very aware of the fact that human activity is destroying the environment. In my town alone, UKBAP priority habitats are being destroyed even without planning permission. Now that SNH is no longer able to comment on non-SSSI planning applications, the planning process rarely does anything to mitigate the negative effect of human activity on the environment. I've become more aware of this since I've become involved in environmental projects.
Disheartened by the attitude of the general public.
Fascinated at the disconnection between environment and many human beliefs / behaviour. Delighted when being out and about monitoring allows engagement with some who just hadn't thought about the implications of their actions before and as a result they change a small part of their behaviour or learn something that inspires them.
Has made me more aware of the impact that humans can have on specific habitats, as I am more aware of what lives there and how humans might impact up on that area.
Humans undoubtedly have an untold negative impact on the natural environment, but working in outdoor learning and citizen science has given me more hope that little steps can connect people meaningfully to the environment, so that they value it more, and value it personally, and they become more willing to look after it.

I feel people don't generally look after the environment properly or fully enough
I have a better understanding of the huge impact human activity can have on the environment if we do not understand how this occurs but also that we can have a positive effect by volunteering and working together as communities on local environmental projects.
I have become very doubtful that human beings will ever acknowledge the seriousness of our negative impact on our planet. Politicians cannot continue to promise and work towards a world where we all live like rich Californians
I have seen damage from industrialisation in the past and also the amazing way that landscapes can heal with good stewardship and good scientific understanding.
I have seen very positive outcomes of conservation action.
I know that individuals at a local level can make a difference.
I pick less and leave areas of the garden rough to assist wildlife - this year I have found identified and left a colony of yellow meadow ants on my lawn.
I wish all humans were dead
It makes me even more aware of the diverse pressures faced by our natural environment
More care should be taken when planning for new developments to incorporate potentially destroyed habitats and the management of derelict sites left to a minimum to allow for natural diversity.
More concerned
Most of the countryside has been modified by human activity. Most often for the worse.
people cause problems
Some people have NO concept of 'nature' or 'environment' and these individuals need educated
The longer I work in this sector the more I despair at what we do to our environment
The more I get involved in citizen science and survey work, the more I see that human activity affects every aspect of the environment.
The more I have learnt about wildlife and the ecosystem interactions, the more I have come realise firstly how human activities have shaped them and secondly how broadly we effect every level of the natural world in a negative way.
Well I guess I feel more positive now I've seen how it works in practice.
Yes. I work in environmental management and working with landowners has made me change my mind about how Northern Ireland's landowners engage with the natural environment and how they manage it.
I appreciate more from the landowners' point of view. e.g. farmers - they need an incentive to become involved in countryside management schemes.
All these questions presuppose you are dealing with mindless idiots. We are constantly bombarded by information about how we humans are damaging the environment. If I have learned anything I think it is that nature is much more resilient than you think.
Always believed we should have a "no impact" approach to life and that my existence is only because of the wider environment.

How has your valuation of your local green space changed? Response: "I value it a lot more"

Because I am more involved in local groups and understand that I can make a small difference to my local environment.
Each little space can host a living thing!
For me it has become central to my way of life and my work.
Have been surprised with the amount of wildlife you can find, especially in urban environments.
I am able to identify more species and I notice more about it.
I can now see the space used differently and for a positive purpose.
I can see improvements every day to local spaces
I have always appreciated green space, however the more and more I work in environmental management and conservation, the more I appreciate it.
I know that if I am not involved in my group I can become insular and lack motivation
I love walking in the woods
I now understand more fully the importance these areas have for biodiversity and are often an oasis for wildlife in an otherwise concrete habitat
I realise how hard won it is and in need of protection.

I respect it more
I see green spaces I didn't know existed
Involvement locally promotes a greater sense of ownership and value.
Local green spaces give local people the chance to connect with nature
Local green spaces provides habitat for wildlife, which means I get to see more wildlife locally and that makes me happy.
Once it is gone it is very hard and expensive to restore. Far better to look after what remains
the local landowners would like to put 9000 houses on my local green space even though some of it is a LWS
There is so much local wildlife to be seen in all green space and there is room to improve habitats and make them more diverse to the benefit of wildlife and us.
We tend abuse it and lose it
Working outside takes you to places you wouldn't otherwise go to and you explore them in more detail and discover more about them.

How has your valuation of your local green space changed? Response: "I value it a little more"

I already valued it a lot!
I am involved in the field and therefore my view of 'blue' space hasn't changed that much but I am aware of its value and impressed how participants view it
I have always valued it, but now I am retired I have more time to visit.

How has your valuation of your local green space changed? Response: "It hasn't changed"

Although I have not been very active recently as a volunteer, I have always had a deep understanding of the value of green spaces.
always valued
I adore it wholeheartedly, always have and always will.
I already value my local greenspace very highly. It was one of the reasons I moved to where I live.
I always valued green spaces, that's why I got involved in green space projects.
I always valued it highly. That's why I started volunteering.
I am lucky to live rurally and get out in 'the wilds' often. I continue to value this highly. I am not such a fan of formal urban green-spaces but understand the 'green-lung' necessity for city dwellers.
I am new to the area and appreciated its potential when I moved into the place. I haven't been disappointed
I have always valued greenspaces and nature in general. I was interested in the environment and its protection and enhancement from a very young age. I think that citizen science is a great way of getting more people involved and also a great way of collecting a huge amount of data via several recording schemes, but it wouldn't change my valuation of my local greenspace as I've always valued it.
I have always valued it highly
I have always valued it.
I have always valued local green space highly.
I have always valued local green spaces.
I have always valued my local green space and will continue to do so
I have always valued my natural environment.
I have always valued the environment I live and work in. I look at greenspace as a more urban feature in the first instance and the areas I work in are more wild. I do understand that my garden however is a green space and try to improve it for wildlife and for enhancing connectivity
I have always valued the green space I have around me
I still place the same value on it as I did before - it's valuable and special to me - I'm one of the converted.
I think I would place the same value on it even if I were not actively involved in wildlife surveys.
I value it very highly already
I've always had a appreciation for the outdoors.
These questions all presuppose you were not aware of this before you started. I choose to live adjacent to the countryside because I value it.

How has your valuation of your local green space changed? Response: "I value it less"

I've always thought it was very important

How has your concern about the effect your local environment has on your health changed? "I am a lot more concerned"

I realise that there is a requirement to halt the loss of biodiversity in line with the 2020 policy and to ensure we protect the natural environment for future generations.

I understand the consequences for the environment when improper land use or management practices are put in place

I've come to appreciate more acutely the positive effect that the environment can have on my health and, consequently, the negative effect that losing green space can have.

Many of our industrial practices in the past are still with us in the form of contaminated land and the health implications bother me. The loss of green spaces locally to development is depressing, so I am less happy overall as a result.

Pollution can kill we are lucky to live in a semi rural environment which is healthier.

The connection between access to and involvement in good quality local green space and well-being is personally felt strongly.

How has your concern about the effect your local environment has on your health changed? Response: "I am a little more concerned"

I am concerned about the threat to natural diversity of habitats and species due to development pressure and intensive farming. Concern about use of chemicals in farming and pollution generally.

I tire at having to pick up other peoples mess

More awareness of pollution etc

The problems with deteriorating environment are for the future at least in the UK. So my health has yet to be impacted, although the smoking ban must have had a beneficial effect.

We all need healthy places to live and grow in.

We have a whisky bond warehouse near our house and all the buildings and trees are going black - this concerns me!!

How has your concern about the effect your local environment has on your health changed? Response: "It hasn't changed"

Always moderately concerned about negative impact eg. pollution

Always outdoor person

Always was concerned

I already knew

I am aware of its impacts already

I am lucky enough to live in the countryside

I am lucky to live in an area where my local environment directly benefits my health.

I am not concerned about this as I know that I am lucky enough to have good access to a variety of green space.

I control my environment within my sphere of influence.

I don't think much about the effect of the environment on my health. I am more concerned with the effect of people on the environment.

I have always been aware that I need the company of others and that as a biologist I have a lifelong concern for the environment.

I have always been brought up to believe that physical activity in the countryside is good for your mental wellbeing. If I was deprived of it I am sure I would deteriorate.

I have always been concerned about the relationship between the local environment and health.

I have always been interested in environmental issues

I have always believed that the local environment has an impact on health.

I have always retreated to open spaces to restore my inner balance
I know I can get to the wilderness without too much effort.
I wasn't concerned (is this a leading question?)
I've always been concerned - I did an M.Sc. in Ecology in 1970/71 but that means I realise how much has been lost.
I've always known being outdoors is good for you
I've always thought it was very important
I've always understood the benefits of local environment - hence drawing me to monitor and improve it.
I've always been concerned that the decline in quality of local environment would have a detriment affect on health
I've known about effects of my local environments before I was involved in any citizen science project.

How has your motivation to protect and enhance the environment changed? Response: "I am a lot more motivated"

I am always motivated to work in the natural environment. I have studied for many years on understanding the best methods on the ground for environmental protection, and the best methods of delivery.
I am now actively recording species that I find in my garden, workplace and while out walking the dog
I feel it is my duty to our young people
I feel more motivated because I now have time to be active in my concerns for the environment.
I have joined three environmental groups!
I like to enjoy wildlife in my everyday life, and I'd like to continue to enjoy seeing the variety on offer. The next generation should be afforded the same opportunities to enjoy wildlife as I have. Species have an intrinsic right to exist free from extinction threat by humanity.
I returned to full time education to study environmental management as the more I see and learn the more I want to protect and enhance the environment
I want to be part of something that saves the world
I'm on a mission!
It is good to feel part of something that lots of people are involved with and are passionate about.
Member of local Community Council, member of local community group too
More information means I am more motivated to act in ways i didn't know possible
Nature needs people to champion it.
Once you start you can see many ways in which you can help and you can see the difference that you are making.
Realisation just how ignorant people are about the natural world, even folk who are well educated and have professional work. At least by talking to them I might enlighten them.
Someone has to fight the good fight!
The more I understand about the natural world around me the more I wish to look after it.
The more you get involved in enhancing the environment, the more obstructions you meet from the local authority, the more motivated you are to protect and enhance the environment. (In my case anyway; most people I know just get pi**sed off and abandon the projects - they're probably the smart ones!)
The old adage "it only takes good men to say nothing for evil to triumph"
There is so much to protect!
Working in groups on environmental projects generates enthusiasm and the more you do the more you find yourself becoming involved.

How has your motivation to protect and enhance the environment changed? Response: "I am a little more motivated"

Helping Scottish Wildlife Trust to respond to planning cases has made me more aware of the extent of threats.
I do my bit + slightly more vociferous
I like the fact that we can all make a difference - play a part or take personal responsibility.
I was already motivated to make a difference
I was always motivated, but now I do more than I thought I would
In recent times of recession funds to protect the environment have become harder to secure. I think more needs to be made

about the link between human well-being and local environment even taking it a step further to increasing understanding and publicity about ecosystem services.
I've always been motivated
Note on blogs actively promote good environmental stewardship
Taking part in CS activities does tend to motivate you.

How has your motivation to protect and enhance the environment changed? Response: "I am a little more motivated"

People are shit and no matter how hard we try to protect the environment it is more than likely going to come down to who has the deepest pockets. We are removing ourselves from the environment in such a dramatic way that I see the Lorax as a documentary of our future rather than a fable.

How has your feeling of connection to nature changed? Response: "I feel a lot more connected"

I am out in nature as much as possible, and when I'm not out in it I am usually doing something linked to it...
I distance myself from people and submerge myself in nature as often as I can - until people understand that without nature we would be nothing I will retreat into myself and shun the world
I feel more connected because I have spent more time outside compared to before and have fulfilled a desire to become more connected.
I have always felt a strong connection to nature.
I know more about nature so familiarity has given me a deeper connection and concern of its future.
The realisation that ecosystems and biodiversity underpin human existence, economics and general well-being.
I like being able to identify more things and being able to talk about them.
I love learning about nature
I love nature, I work in the sector so I should really.
I now spend more time in nature so I feel more connected.
I seek out identifications on all that I find.
It has grown stronger as I am spending more of my career working in the natural environment.
Knowing what is in the local green spaces makes you feel more connected to them.
Simply by knowing much more about it, and how my actions might effect it.
Since participating in this kind of thing I am more able to identify different species of birds, plants, insects etc.
The more I understand about the natural world around me the more I appreciate all of the species that co-exist with us and the more I feel a sense of belonging to the world.

How has your feeling of connection to nature changed? Response: "I feel a little more connected"

Always had a fascination with nature, but now have more time to study it.
Every time I experience nature I feel more connected.
I already spend a lot of time outdoors
I had never seen the larval forms of river flies before completing the workshop so feel that I have discovered something new and better understand their connection to fish and bird populations as well as geomorphological structure and habitat. Equally with electro-fishing and monitoring for coarse fish. I have seen lots of new things and am keen to learn more. A recent workshop on White-clawed crayfish and their plight continues the trend.
I have always been connected to nature but this knowledge has allowed me to take part rather than just look on
I have always had a good connection with nature, but being involved in citizen science encourages me to get out more.
was connected in first place, that's why I participate

How has your feeling of connection to nature changed? Response: "It hasn't changed"

Always been in tune with surroundings
Always been interested and concerned.
always felt connected
always used the outdoors

Before CS I felt well connected with nature.
I am fairly well aware of how reliant we are on the natural environment and how fragile this reliance is and how we are increasingly meddling with the natural environment so that it can support our growing population. However, I am constantly learning new things, such as the fact that we need to import bees from Europe to pollinate our fruit crops, or that we need to mine for potash in an English National Park in order to cope with demands for fertilisers to feed the growing global population. So I do feel connected to (reliant upon but also impacting upon) nature but I think this is as a result of what I have learnt from other people, newspaper articles, television, internet etc rather than as a direct result of taking part in biological recording.
I have always been connected with nature but fight to retain the connection
I have felt connected to nature for a while which is why I wanted a job in conservation. I seek opportunities to understand and learn more about this connection and hopefully pass on this information to others - without preaching
I was brought up in a semi-rural setting and have always felt strongly connected.
I'm not sure that connection to nature is so important to me, I'm more concerned with the impact the environment has on people than my connection to nature
I've always been connected to nature
I've always felt connected to nature; that's why I got involved in the first place.
Nature has always been very important to me.

How has your use of your local green space changed? Response: "I use it a lot more"

Because I like to see wildlife, I spend more time outside and invariably this means countryside and green spaces close to where I live. This is particularly so because I do not drive.
I am out more frequently walking and in the garden
I am outside much more working with various environmental groups.
I am retired
I attend regular recording excursions, or go out recording just with my girlfriend.
I do a lot of walking and running
I have a dog to walk
I like to go out to local green areas to look for wildlife and to relax in it.
I now use it for teaching as well as for personal leisure, pleasure and learning
I regularly go for walks and interact with my local green space.
I spend more time outside exploring
I walk a lot more now.
It's relaxing and peaceful.
The local greenspace is more usable.

How has your use of your local green space changed? Response: "I use it a little more"

Already use local greenspaces a lot at work and in my personal life.
Being involved in citizen science encourages me to get out more.
Great that you can do citizen science in an urban area.
I try to get out every day for a walk along the local canal or nature reserve, I have more time now than I did so I tend to use local green space more
I use it more often because I do more biological recording.
I would also add Blue space
Online recording systems have made it much easier to record wildlife and to be confident that the data will end up being used for something, which has motivated me to visit my local green spaces - notably a churchyard, a managed woodland and arable field margins, i.e. all highly modified habitats.
Survey work forces me to get out when I might have stayed at home.
time, travel and work time don't always allow as much use as I'd like

How has your use of your local green space changed? Response: "It hasn't changed"

All ways out doors
As above - I've always been interested in wildlife and have a dog to walk.
Have always had a love of the outdoors and will use whatever green space I have access to.
I have always used green space a lot.
I like to use it all I can.
I recently gave a winter talk 'A Walk round Bridge of Allan with a Naturalist' and was astonished how few of an elderly audience ... many of whom had live a significant proportion of their lives in the village had never walked any of the major core paths like the one from Dunblane to BoA along the river Allan. Since I retired I have walked out into the countryside at least 4 times a week usually to monitor wildlife. I listened to a programme about nature deficit disorder which stated that if children were not exposed to countryside activities before ten they will spend their lives trudging round shopping malls.
I use it a fair bit.
I use it the same as I always have
I used it a lot anyway
I work in lots of places around the area
I would always connect with my local green space by either volunteering, working in it or using it for recreational purposes. I am an outdoors person
I've always spent/ tried to spend a similar amount of time in the outdoors. I might have done more generic walking or going for a picnic in the past whereas now I might combine this with or use my time more for biological recording/ surveying.
I've always used local green spaces
used it as much as I could

How has the amount of practical action you take to protect and enhance the environment changed? Response: "I do a lot more"

I actively look out for groups clearing spaces of invasive species etc. Report sightings of such etc.
I am now a trainee ecological surveyor.
I am very passionate about stopping people being bozos with the world
I do more because I have the time and energy.
I have been involved in many practical conservation projects (volunteering on nature reserves) and biological recording to feel like I'm contributing toward protecting the things I care about.
I now do this kind of thing on a much more regular and frequent basis
I record wildlife and maintain a much wilder garden.
I recycle more.
I volunteer when I can
I was doing quite a lot anyway but now I try to get involved with lots of conservation organisations instead of just one or two.
I write the newsletter for local community group, guided walks with local schools, active member of community council
It has increased greatly because I am aware even more of the issues in the natural environment and I work in this line of work to try to overcome these issues. It will keep increasing over the next years as I obtain more responsibility.
Most of what I do is designed, in one way or another, to protect and enhance the environment.
Since I have retired I have been able to volunteer for a number of environmental projects. I did not have time when I was working.
There are more projects to be involved in
Volunteer for Butterfly Conservation. Regular surveying. Attend primary schools to talk about butterflies and moths, when invited.

How has the amount of practical action you take to protect and enhance the environment changed? Response: “I do a little more”

Already do a lot at work, just trying to take some of it back to my own garden at home.
As I get older I feel more urgency to protect threatened habitats and species.
Citizen Science has helped make a little bit more of a difference to helping conserve biodiversity.
Garden, conservation volunteer
Getting involved is positive and does encourage further involvement.
I contribute through recording
I do more volunteer action whereas before I was in paid environmental work ending with a desk job.
I get involved with practical action when I can, more than I used to
I volunteer for more national citizen science surveys and volunteer for a local charity and NGO.
I would like to do more but time is limited...
I've started growing plants (flowers) in my own garden space to provide food for bees and insects
I've taken up additional volunteering carrying out bird surveys.
my garden, I also help develop/promote inns projects
Note record and advise relevant stakeholders

How has the amount of practical action you take to protect and enhance the environment changed? Response: “It hasn’t changed”

always been involved
I am a conservationist
I do a lot anyway
I think I have always done a lot of practical work anyway - the nature of it has changed, becoming more focussed on local parks and reserves rather than in nature reserves that are outside my local area.
I was pretty active in this before CS.
I work for 2 wildlife trusts and have been working in this sector for over 10 years
it is part of my job
These questions are flawed if you have done this all your life. I do an enormous amount of conservation work.

How has the amount of practical action you take to protect and enhance the environment changed? Response: “I do it less”

I used to undertake practical conservation work while I was at school and university (TCV, Wildlife Trusts) but I no longer do. All my spare time is spent biological recording or training and engaging others to do biological recording. I would like to do practical habitat work again, it is rewarding and enjoyable, although from a conservation viewpoint it can feel like 'gardening and zookeeping'.
To my shame-full of good intentions which never materialise at this moment in time. Have volunteered before and fully intend to do so again once life settles down a bit (no excuse really, I must do better right now!)

How has the amount of action you take because of the influence your local environment has on your health changed? Response: “I take a lot more action”

As I get older I think about health more and more
Because I am fit and healthy, I guess it doesn't figure too much in my thinking. I am aware of it, but my motivations are predominately elsewhere.
Conservation is my job, but I have started helping a local business set up a nature garden in my free time.
Not just my health, more my sense of empathy, plus it is just enjoyable and interesting.
Work through local River Watch groups to raise profile of local issues with Parish Councils, EA, Water Companies and other relevant bodies. The monitoring and data collection we do helps create scientific evidence for the issues we wish to tackle.

How has the amount of action you take because of the influence your local environment has on your health changed? Response: "It hasn't changed"

Always outdoors
Badly worded question...
don't understand the question
I am more a planner than action orientated.
I tried to take more but have become too cynical to continue
I was active before I participated in citizen science projects.
I'm not motivated to protect the environment because of the effect this will have on me; I'm motivated because the environment is important for its own sake and is important for the health and well-being of the community, as well as the local economy. (By the way, 'How has the amount of action you take because of the influence your local environment has on your health changed?' is the most convoluted question I've ever been asked! Half of respondents won't be able to disentangle its meaning.)
It isn't my health that worries me, but the health of the environment. (By the way, why is there not a tick box below for 'retired'? I do not consider myself unemployed)
My health has not changed
no idea what this means
Still like to exercise just the same
The amount of action has changed for other reasons, not health.
This is not what motivates me.

How has the amount of action you take because of the influence your local environment has on your health changed? Response: "I take less action"

Recording in my free time takes up the time that I might be doing more strenuous exercise such as practical conservation.

How has your participation in local community activities changed? Response: "I am a lot more active"

Getting involved in various local wildlife groups. Attending excursions and talks. Sadly too busy and too unsure of where I will be living in a year's time to take on any committee roles.
I participate in the Green Gym and I have been on holiday as a conservation volunteer.
I'm active in the sense that I organise such activities.
I'm now volunteering so working with the community in different ways to my working life. NB there is no Retired category below- surely the biggest source of voluntary action!! Also I feel some of the questions are a bit patronising - don't assume The Public sit about all day as the baseline!
It hasn't changed dramatically at the moment, but I am establishing Citizen Science Projects for 2014 which will see the increase in my participation with these community activities.
Participating locally is easier to fit in around everything else, and the opportunity to do so is there (that was not the case 10 years ago)
see above
Since I retired I now have time to volunteer in local activities
There are more community activities to get involved with

How has your participation in local community activities changed? Response: "I am a little more active"

I don't think "community activities" is a good term for most of the things I do, but I suppose it could describe my involvement in planning responses.
I have joined a couple of local groups with shared interests.
monitor on behalf of various organisations
My activities are more widespread than just local (what do you mean by local anyway).
The college course I am enrolled on requires that I fulfil 300 hours volunteering with local land based action groups.

How has your participation in local community activities changed? Response: “It hasn’t changed”

Already do a lot.
always been involved
I am very involved with my county natural history society but I wouldn't call this 'my local community' as it spans five vice counties and we are united by our interests not our locality. I am not at all involved in my local community. I am very involved with the national and even international community of people involved in biological recording, through social networking groups for these specialists.
I tend to be involved in activities further afield than my local community
I try my best
I was active already, only change is that i probably encourage other to be more active too
My engagement with citizen science is via national schemes and has not resulted in any local community involvement.
My job is to engage my local community in Citizen Science activities so I do this anyway
This answer applies to all questions. The questionnaire appears to make the assumption that getting involved in 'citizen science' is likely to have increased my understanding and awareness of environmental issues. For me, this is definitely not the case. In fact the exact opposite is true - concern about the environment is the reason why I have become involved in citizen science. PS Scotland's Environment Web is terrible. Best idea would be to scrap it.
Work full time

How has your participation in local community activities changed? Response: “I am less active”

Communities are great for getting stuff done at a local level in theory.....until you realize that the community have jobs, family and other commitments. Retired folk are the most abundant, young people don't give a crap unless they are thinking of going into this sector and have resigned themselves to the fact that, by working to prevent the collapse of society which would come it we built housing estates over the entire globe and keep breeding at the rate we do, they will earn less than anyone else in the world which is justified as 'but you enjoy your job'.....Oh I see, I enjoy watching you fuck up all my hard work! C**k!
I am now self-employed and have less time to be involved in community activities than when I was a salaried employee
Owing to several major life changes in recent years my practical environmental activities have taken a back seat but this will be remedied soon.

Annex B. Written answers from new Citizen Scientists

Note: **Red** responses are from participants who did not participate in Citizen Science, or who did not fill in the second survey, and whose answers were therefore not analysed. *Italicised* responses are from participants for whom English was a second language.

Please tell us why you gave that answer [to the question: Could you confidently tell others about why Citizen Science and Public Monitoring are important?]. *Follow-up survey only.*

Through practice
They are important for two main reasons - they tell us what our greenspaces contain and they get people engaged with their greenspaces.
Allows us to gather information about people's public knowledge of conservation and why it is important.
I have learned about the effects in the local community and conservation work.
Not good at explaining things
Because I have done some work related to Citizen Science.
I understand that Citizen Science and Public Monitoring are important, to get the public involved in monitoring the environment.

Please give us examples of what you know people can do to protect the environment

<u>Baseline survey</u>	<u>Follow-up survey</u>
Storing carbon in peat bogs, habitat restoration	Plant wildflowers, planting trees, digging ponds, remove non-native stuff.
Community based projects, biodiversity management, control on human developments	Recycling, carbon offsetting, community based conservation activities, reduce amount of driving, etc.
Making sure to use footpaths and not trample through areas that can result in erosion. Planting wildflowers in the correct areas and allowing bees and butterflies to prosper. Noise pollution in protected areas e.g. Lake District	People can do little things such as recycling and looking after their own greenery. People can get involved in environmental conservation by visiting local events.
A lot	
Being responsible for your actions not littering/fly tipping. Leaving places wild for nature, encourage wildlife into your garden	Use cars less, don't fly tip or drop litter, eat local food, take care of wildlife and green areas
Don't drop litter, recycle stuff, try and walk more.	Walk or cycle, don't pollute or drop litter, recycle, look after the bugs and trees
Plant wildflowers, tidy up forest areas	
Recycle, use cars less, walk more	Recycling, use the car less
Recycle. Be aware of carbon footprint. Protest against fracking	Recycle
I take personal responsibility for reducing carbon emissions and waste. I act locally - volunteer occasionally.	
Care for plants and buglife leave nature to take its course and create habitats and possibly start groups for identification and awareness	Keep it clean, protect the bug life and plant life and animals.
Scientists research green energy and tech. Conservations protect species	Rhododendron removal
<i>For example people can try to recycle their waste, try to use less the car, try to buy eco-friendly products in their everyday life.</i>	<i>People can recycle their waste, use the public transport or the bike instead of using their own car, try to waste so much water.</i>

<i>Way of life, diet, consume local products, reduced waste, use the public transport, recycle, reduced consume</i>	<i>It is important to change the consumer habits. Nowadays, the people consume a lot of things, and from very far origin. To protect the environment is better to consume local products, and products that are making with respect to the nature. Also we have to reduce our residues, and if we can't reduce or reuse, we should recycle.</i>
Recycle, get involved in conservation projects within their local area, record wildlife.	I know some of the things that people can do to protect the environment but need to learn more.

Please give us examples of what impact participation can have on health and well-being of individuals

<u>Baseline survey</u>	<u>Follow-up survey</u>
	Gives them more confidence in themselves and experience. Provides exercise.
Environment can affect people physically and psychologically. Bad environment can make people depressed and/or develop heart problems etc.	Areas with bad air quality tend to have higher death rates and larger numbers of people with lung conditions
Allows people to gain experience and therefore confidence in environmental projects e.g. tree felling for footpaths; planting wildflowers. These can be beneficial to a person's outlook on conservation and encourage them to do more.	I know that a person can lower stress levels and gain a calmer approach to life if they spend time outside.
Makes me feel good so I guess it helps for others too	I feel better because of it
I love volunteering, makes me feel good to get more confidence, gets me out and about. Get fitter.	Makes you feel better, puts you in a good mood, good to get some fresh air
Fresh air, exercise, company	
Keeps you fit, helps mental health	Being out and about in nature helps to lift your spirits.
Health benefits	Clean air, fitness levels increase
Health and social benefits - i.e. meeting new people, working outdoors, seeing the results of one's work	
Physical and mental wellbeing can be improved and can allow new doors to open in employment and other aspects in life.	Pollution, habitat destruction
Working hard keeps you fit.	Burns calories
<i>If more people participate in environmental projects more people will benefit of it and have a better quality of their health.</i>	<i>If people try to help environment doing the things I have told before, a lot of unhealthy gases and other damaging compounds would be avoided. Apart from that, people could participate in environment planting trees, cleaning rivers...</i>
	<i>If you participate in environmental projects and you like the nature and the activities in the outside, you will feel good.</i>
Improves confidence, improves understanding of environmental issues, improves social skills.	Participation helps get people to achieve and helps to improve their knowledge of the environment.

Please give us more examples of the impact your local environment has on your health and well-being.

<u>Baseline survey</u>	<u>Follow-up survey</u>
Factory pollution can be detrimental to your health	Made me a little fitter, good for keeping my brain active.

Community based projects allow people to understand personal impact and improve their environment other projects physically just improve environment	A better environment around me relaxes me, helps with my asthma and makes me feel generally better.
The amount of pollution that cars and factories etc. can have a huge impact globally on air quality which then effects wealth and well being. It costs more money over long term if people do not look after their environment in terms of taxes.	I know that the better our environment the better our air quality is allowing a longer life expectancy. The cost of keeping your environment clean increases the worse it gets.
If you live somewhere nice you will feel better in yourself. No-one wants to live in a dump.	Like to live somewhere nice. Make you feel better if your surroundings are nice.
	Feel better when your area looks nice rather than a dump
Tidy grounds, new plantings, cleaner environment	
	Good to be out in the fresh air, good for your health.
Not too sure	Just nicer to live in a clean environment
Fresh air, space for exercising e.g. walking and running	
I walk in it and it keeps me fit.	
<i>The quality of your health would be worse if you live near a factory that pollutes than living in the countryside.</i>	<i>If you live in a city for example, the car's smoke or the smoke of different factories can be damaging for our health.</i>
<i>Air quality, water quality, relaxed in a good atmosphere, few noisy</i>	<i>The local environment is the area that you live, the air you breathe, the food that you eat, so is very important to have a healthy nature to live together.</i>
Pollution from cars and local factories can cause respiratory problems. Although the woodlands nearby are useful for walking, cycling and exercising.	It keeps you fit and active and helps to improve your knowledge of your local environment.

Please tell us why you gave that answer [to the question: What impact do you think human behaviour has upon the local environment?].

<u>Baseline survey</u>	<u>Follow-up survey</u>
Destroy it through pollution	Putting too much CO2 in the atmosphere. Global warming.
The populous of humans on the planet means anything we do has an exponential effect on it.	Climate change has been accelerated significantly by what people put into the atmosphere
The amount of problems that we cause for example from little things like littering to oil exploitation all accumulates in making a huge impact	Human beings will try and occupy every greenspace on this planet - since the industrial revolution we have increased the rate of global warming etc.
	We are good at destroying stuff!
Neglect, vandalism has negative effects. Regeneration projects can help fix these.	
Because environmental problems are caused by humans	Because it is obvious
Impact from all human activities and land use is extensive. Large and small scale environmental projects can improve degraded land and biological diversity.	
	Because we can easily destroy or create a better environment by building housing for one example or by planting trees as another.
The planet would look completely different did humans not exist. The UK would be covered in trees.	We burn things
It's quite known that the human and its behaviour is the main reason of the deterioration of the environment.	We are generating plenty of waste without recycling it, we are throwing a lot of damaging smoke to the atmosphere, we are destroying a lot of different habitats and species and in

	<i>my opinion we are being the people responsible for the climate change.</i>
<i>The human can produced impact in the environment, will depend of the correct management.</i>	<i>The impact of the human is considerable in the nature, because nowadays we have the capacity to modificate our surrounding area, so we must have responsibility.</i>
Changes in temperature and weather patterns, can be attributed to global warming.	

Please tell us why you gave that answer [to the question: What value do you think your local greenspace has?].

<u>Baseline survey</u>	<u>Follow-up survey</u>
Friendly, clean space	Important for well-being of children and adults.
Allows for managed biodiversity areas as well as activity areas for people allowing for the chance for education in stuff.	It gives people a place to engage with nature and also is important for a lot of different species.
Where I live is very rural and well kept and I feel strongly that it should be preserved for future generations.	I want future generations to have the ability to use their greenspace as much as possible so they can benefit from a healthy lifestyle.
I value it - others may not.	
Lots of greenspace in Easterhouse	Lots of nice green places in Easterhouse, wish people knew about them though
Plant and wildlife diversity is considerable, even in urban areas.	Although, many areas seem to be invisible to local people
Lets people enjoy the outdoors	It gets people out helping to keep their area nice.
Mental and health benefits	Nicer to live in
See Q8 above.	
Because it can protect and serve our environment for the better.	Possible change for a better environment.
Large numbers of orchids	Dog walking
<i>I think we have enough greenspaces in here but at the same time no many people use them. So I think we need to encourage people to use them more frequently.</i>	<i>Because it is the place you can relax, avoid the pollution and have a good time. Apart from that, is the place the plants are doing the photosynthesis, so the pollution level should be quite low.</i>
<i>The local greenspace is important for the life of the citizen, but is not a real natural habitat</i>	<i>As I mencionated before, the local area and environmental that we live near, is very important in our healthy. Also, the greenspace is being used to play and spend time, so has a huge value.</i>
The local greenspace is under-used and could be used a lot more. It could be used for more.	Not very active in the local community.

Please tell us why you gave that answer [to the question: How concerned are you about the impact that your local environment has on your health and well-being?].

<u>Baseline survey</u>	<u>Follow-up survey</u>
Causes problems with eyesight personally	I go lots of walks in greenspaces. I get a lot of access to greenspaces.
Pollution levels and litter has proven effect on health as someone with asthma I feel this effects me.	Although in relatively good health at the moment, I wonder how this will decline if my environment becomes worse as there is a causal link.

I feel that my local environment is well protected so I do not see problems in the future. I would be concerned if my local environment did change - as I feel the benefits are endless.	I want to be able to enjoy the outdoors without feeling gases poisoning your lungs.
Because it can damage our health and kill wildlife and plants if unattended	We destroy ourselves by destroying our environment.
More concerned about the impact humans have on the health and well being of the planet.	
<i>I really think we need to change the things are not done in a eco-friendly way and turn them into a eco-friendly way.</i>	<i>I know what kinds of pollution sources I have in my town, and I try to contribute to avoid that pollution as much as I can.</i>
<i>Is important for the citizen, leisure, children</i>	
Only a little concerned, as although I do my bit to help the environment, I do not yet feel able to contribute in a big way.	

Please tell us why you gave that answer [to the question: How motivated do you feel to help protect and enhance the environment?].

<u>Baseline survey</u>	<u>Follow-up survey</u>
Improves personal health	It's good fun, meet new people. Environment is important.
I love my environment and everything within it everything has purpose and we need to protect that and prevent it from being destroyed	It is something we need to protect for future generations to come. As humans we have a massive impact already and need to try and reverse some of that.
I strongly convince others that where we live should be treated with respect and find an environment that is well kept pays for itself. It invites people in and what is more important than the earth we live in.	I have a great passion for my environment and I am seeking a career in conservation.
The areas where I volunteer aren't where I live so I am motivated to help but not necessarily in my own neighbourhood - no TCV there!	Like to take part in practical activities
I like to volunteer	Love working outside to make things better.
Volunteering has given me the change to help with environmental issues. Need guidance from staff to educate on diversity.	
I feel motivated to go out and participate in the Green Gym	
Working outdoors is fun.	
Because it's life changing	We can better ourselves and build a brighter tomorrow in the process.
I picked my uni course on that theme.	It's motivating
<i>As I'm very interested in the environment and its protection, I really want to change things to be better for the environment.</i>	<i>As I told before, I currently try to protect the environment and I will continue doing it.</i>
<i>I try to do something to reduce my impact footprint.</i>	<i>We can make a lot of different things to protect directly or indirectly the environment.</i>
I would really like to help in a "big way" and to do more to help the environment.	I feel quite motivated to help protect and enhance the environment because I am interested in learning more about the environment.

Please tell us why you gave that answer [to the question: How connected to nature do you feel?].

<u>Baseline survey</u>	<u>Follow-up survey</u>
------------------------	-------------------------

Inspires creativity through photography	Because I am a part of nature.
I have always had an affinity with nature but I appreciate some things more than others	I feel most at home when in greenspaces being outside calms me. I also find all different types of species fascinating.
Since a young age I have always felt like I want to be involved somehow with nature. I also feel it is important for future generations to have that same connection - outside is fun!	Since I was a boy outside was one of the best places to be. I felt like running and playing all the time.
I work/go outdoors a lot	
Nature is our life source	It's good to let nature thrive.
I spend a lot of time outdoors.	I'm outside a lot
<i>I love the countryside, the animals and the plants and I like spending a big part of my time in and with them.</i>	<i>I love nature, I love animals and plants, mountains, green places and I love being in nature without damaging it.</i>
<i>We are part of the nature, we need the nature to eat, to breathe, to drink, to enjoy, to live.</i>	<i>We are part of the nature, because we need the nature resources to live. So we have to protect and take care of them.</i>
I have spent lots of time outdoors; walking, birdwatching and taking photographs, so I do feel connected.	I maybe don't spend enough time amongst nature as I would like to.

Please tell us why you gave that answer [to the question: Who do you think should be responsible for protecting the environment?].

<u>Baseline survey</u>	<u>Follow-up survey</u>
It's their space more important to them than anyone else	We're paying them taxes, the money should be used to protect the environment.
Everybody should be responsible for protecting the environment from bottom to top is everyone's concern	Everybody has a role to play from top to bottom. Our environment is so large it needs everybody working together.
The fact that in developed countries there is a lot of greenspace that has been removed for oil, gas, planning etc. means that we should be responsible and take pride in showing others the way forward. From individuals to prime ministers.	Everyone should be responsible for the environment as everyone should be working together for the benefit of all.
Everyone has to help. Not down to one organisation.	Everyone has a part to play
Government	
All of the above should participate; from funding to practical tests	Funding and resources from organisations and participation by individuals
It belongs to everyone	It's up to everybody to do their bit.
	Everyone should play their part
Environmental conservation should start with one's own actions and beliefs; the communal and organised action will follow.	
Everybody	We must make sure nature will not be destroyed by our own mistake
Important and expensive issue	It's important
<i>We all need to be responsible for the environment if we really want to protect it.</i>	<i>I think that all the people mentioned before must be protecting the environment, because all of us are part of the environment so all of us should protect it.</i>
<i>All of them are important to protect. Each one in their level.</i>	<i>All should be responsible with the nature and for protecting the environment. Is not a scale, is a network.</i>
People in local communities should look after their own local environments. It would make looking after	The government should be funding more projects to help protect the environment

environment more manageable, rather than only a few groups/individuals.	
---	--

Please tell us why you gave that answer [to the question: How often do you use your local greenspace?].

<u>Baseline survey</u>	<u>Follow-up survey</u>
Allows me to experience nature	Because I enjoy it.
Due to other commitments I don't get out in it as much as I would like however my volunteering takes me to other greenspaces.	I have been trying to get out more to experience my local areas and understand the environment around me.
I walk whenever I can and I feel it encourages others if there is a healthy, booming greenspace with biodiversity at the forefront of local counsels' agendas.	I am a conservation volunteer leader for TCV and I am always walking in and around my greenspace.
Again, using greenspaces more in areas where I volunteer and necessarily local to me.	
I walk a lot and visit the greenspaces when volunteering	Volunteer for Easterhouse Green Gym
Use sometimes	
I am out and about a lot in GreenSpace	
Se Q8 answer.	
I am trying to start a project in my local greenspace	We don't have one yet but I am trying to get a project started for one.
Because I use it a lot	I just do
<i>I like going to have a walk or a run to the local greenspaces and relaxing reading a book as well.</i>	<i>I like to go to local greenspaces to relax, read a little bit or take pictures of animals and plants.</i>
<i>I prefer to go to move far away</i>	<i>I prefer to go more far away from the city, so my local greenspace I don't use a lot.</i>
I just do not get the time to use it as much as I like. I have a lot of things to do and only use it when I have some free time/leisure time. Only very rarely at the moment.	I walk in the local country park but not too often.

Please tell us why you gave that answer [to the question: Do you take practical action to help protect and enhance the environment?].

<u>Baseline survey</u>	<u>Follow-up survey</u>
Volunteer with TCV and Shettleston community growing project	Way of getting peace and quiet.
I am a CVL with TCV	Work with TCV as Project Leader on sites. Volunteer with RSPB at Lochwinnoch, Baron's Haugh and Airds Moss
Yes as I am a TCV Volunteer Leader	Conservation volunteer leader, TCV, Glasgow
Volunteer for Easterhouse Green Gym	
Green Gym	
I recycle	Green Gym
I volunteer for conservation organisations.	
	I am part of the trust for conservation volunteers
Because I do.	Helping at TCV
<i>I'm currently volunteering with TCV.</i>	<i>I everyday use my bike to commute, I try to help environmental organisations as much as I can and I don't eat meat, fish nor transgenic plants to avoid climate change.</i>

<i>I am a environmental volunteer.</i>	<i>Yes, I was in a volunteer group in TCV Stirling, Scotland</i>
By recycling, composting, putting up bird boxes.	I am involved in some conservation projects

Please tell us why you gave that answer [to the question: How much action do you take because of the impact the environment has upon your health and well-being?].

<u>Baseline survey</u>	<u>Follow-up survey</u>
Because of effect on eyesight	Partly, but also for enjoyment.
It doesn't have a major impact on my health as of yet so is not my main motivation.	I am of good health at the moment so doesn't affect me directly. However more I learn the more it becomes a concern.
I know that many others may not care about the environment unless they can see physical and mental damage effecting their lives. However I feel that we should encourage others to protect and enhance our environment so that it is not on the brink of annihilation.	I find that there is never enough work to be done as a way of setting an example for others. Too often show the way for others to follow and engage them.
<i>Conservation work is labour intensive, so one has to put in a lot of hours in order to achieve something.</i>	
Because it has to be done	Because it is needed
<i>My health does not factor into my reasoning</i>	<i>More concerned about environment than health.</i>
<i>I always try to use the car/bus as less as I can and I try to walk. I try to buy eco-friendly products and taking parts in activities to benefit the environment.</i>	<i>I use my bike everyday to commute.</i>
<i>I try to reduce my impact in the nature, reduce the waste, recycle, reduce my consume</i>	
Only a little, but it is important to help enhance the environment as a way to improve your health and well-being.	It keeps me fit and active and helps to expand my knowledge of the nature and my local environment.

As a result of your participation in Citizen Science (biological recording and environmental monitoring), what changes have resulted for you? *Follow-up survey only.*

I have a better understanding of how to protect the environment.
I have a greater understanding of our environment and the contributing factors that affect it. I look out for indicators of air quality as well as certain invertebrate types more than just mammals and birds.
Wanting to take part in local community projects instead of just with TCV in Glasgow area.
Have learned a lot about the wildlife in the sites we have worked at. More care and respect for the small creatures that are often overlooked but they all have a part to play.
Has been good having Paul (the bug man from Buglife) out with us. Learned lots about the wildlife in Easterhouse. More confident trying new things now.
More knowledge
Better awareness of the countryside in local communities. I also feel fitter with the physical work.
I feel more healthy
Nothing
There are none to take part in
<i>I know more</i>
<i>Now I know how important is to record animals and plant and even more if they are about to disappear. Now I know that I really need to protect them and that some of them can be pollution indicators, so we can have the information of how polluted is our environment and in conclusion try to do something to reduce the pollution.</i>

<i>I realised that we have more nature in our surrounding area than I thought.</i>
--

Increased knowledge of different species and more aware of what is around me.

Has anything else contributed towards this/these changes? *Follow-up survey only.*

No

The fact that I have a very bio-diverse environment on my back door step, literally. The realisation I don't do enough at a local level.
--

Has been a good learning and group bonding opportunity
--

Good to have opportunities to do different things.
--

Using Google Earth to discover green spaces.
--

No
