Nature Connectedness Place Making Toolkit

Report, Findings, and Recommendations from First Trial, 2022-2023
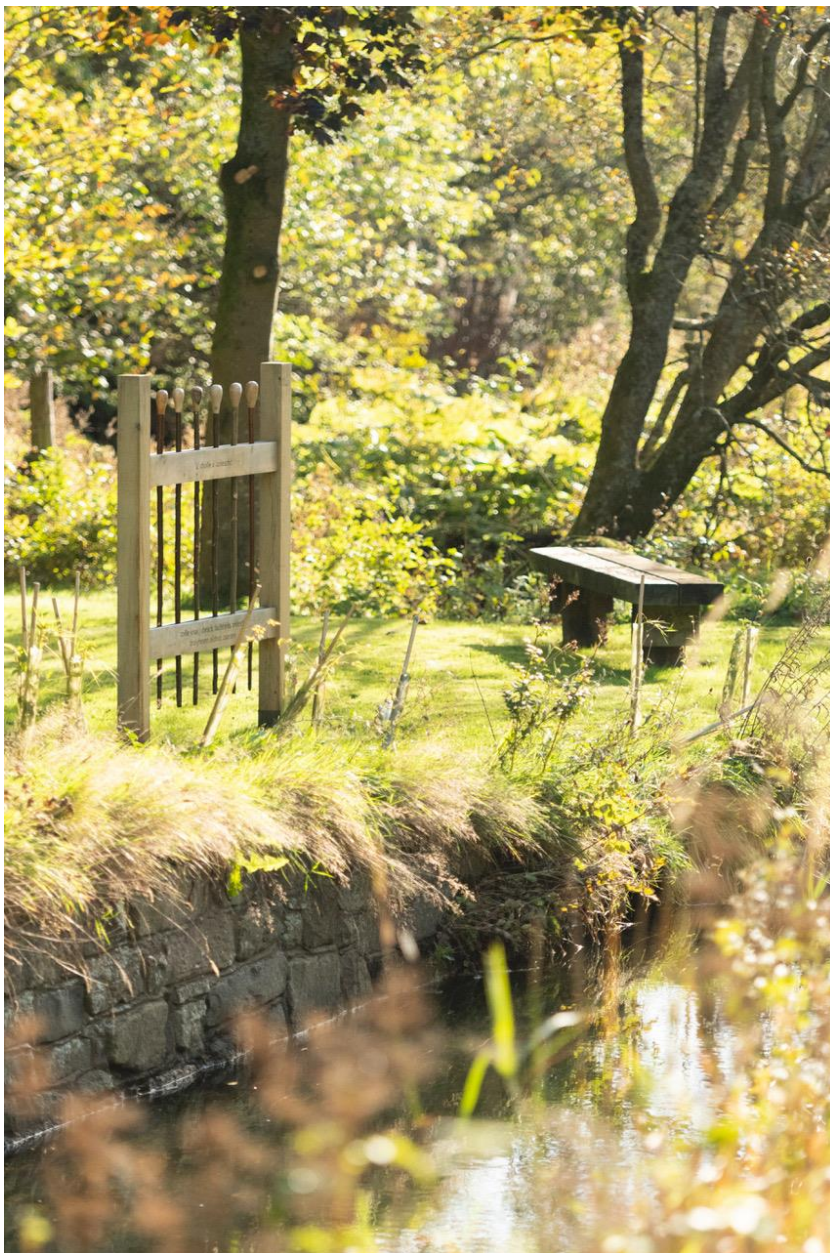
1. Background to Paths for All

Paths for All is Scotland's walking charity, our aim is to support people in Scotland to be active every day, and live happier and healthier lives. Walking is the easiest and most accessible way to do this. Please visit https://www.pathsforall.org.uk/about-us-1 for more information.

Since Paths for All was established in 1996, a core part of our work has been providing advice and support to communities and organisations, helping them maintain and develop path networks. Recently we have been developing nature connectedness projects, promoting activities that people could do while walking to help them connect with nature.

In 2022 we developed and trialled a placemaking toolkit, that could be used by path managers to develop / manage paths in a way that enticed path users to connect with nature.

The results and findings from this trial are contained in this report.

2. Introduction to Nature Connectedness and the Five Pathways to Nature Connectedness

Nature connectedness examines the relationship between people and the rest of nature. This relationship is important for our wellbeing and for nature conservation. People who are more emotionally connected with nature, tend to have greater eudemonic well-being, meaning they are functioning well, and have higher levels of self-reported personal growth. In addition to this, they are more likely to do things to help nature and live in a way that has less on an impact on our environment.

It is recognised globally by organisations such as the United Nations and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, that the human relationship with nature is broken, and an underlying cause of the environmental crises. This broken relationship can be fixed by encouraging people to connect with nature through nature connectedness.

To become more connected with nature, we have to do more than just spend time outdoors. We have to develop a meaningful relationship with nature, rather than develop knowledge about nature.

The Five Pathways to Nature Connectedness (summarised below) provides ways to develop this relationship.

1. **Senses**: Tune in to nature through your senses. Listen to birdsong, smell wildflowers, watch the breeze rustling leaves, walk barefoot on the ground, or taste the fruits of nature. Engage your senses to connect with the natural world.

2. **Emotion**: Feel alive through the emotions and feelings nature brings. Discover joy, wonder, and calmness when interacting with wildlife, marvel at intricate spider webs, and find tranquillity near water. Embrace the emotional connection that nature evokes.

3. **Beauty**: Appreciate nature's beauty. Whether it's through poetry, music, art, or simply observing the natural world, take time to recognise and celebrate its aesthetic appeal. Beauty in nature can uplift our spirits.

4. **Meaning**: Reflect on the meaning and signs of nature. Consider what nature signifies to you personally. It could be a source of inspiration, a reminder of life's cycles, or a symbol of resilience. Find your own meaning.

5. **Compassion**: Care for nature and help it. Show empathy and concern for the environment. Whether it's participating in conservation efforts, reducing waste, or advocating for green practices, compassion drives positive change.

3. Summary of Paths for All's Work on Nature Connectedness

Paths for All's work on nature connectedness started in 2019. Our Community Paths Team collaborated with members of our Walking for Health Team.

The teams worked together to equip some Health Walk groups with backpack kits. These kits enabled participants to notice nature on walks, and/or to do small things that improved the places where people walked. During Covid lock downs, health walk groups were not meeting up, this made continuing with the project unviable at that time. However, we felt there was an opportunity to develop a social media campaign, to promote nature connectedness, and encourage people to connect with nature on daily walks.

This campaign led to significant numbers of people engaging with our online content, and won a highly commended award in the Nature of Scotland Awards in 2021.

Since then, nature connectedness messages have become embedded in our communications work across the organisation.

We have identified other opportunities where we could use our skills, networks, and experience to develop new areas of work that would encourage more people to connect with nature.

One of these areas involves developing path networks in a way that would entice users to pause and notice nature more. This has led to us trialling what we call the 'Nature Connectedness Placemaking Toolkit', and this is the focus of this report.

4. Aim and Purpose of Nature Connectedness Placemaking Toolkit

This toolkit will act as a consultation tool and collect information on how users of a path connect with nature. It consists of a series of questions that are linked to the Five Pathways to Nature Connectedness.

It has been developed to be used by path managers to identify changes that can be made to path environment that will entice future users to develop a stronger relationship with nature.

N.B. The path environment consists of the path surface and surrounding area.

The toolkit includes questions linked to the Nature Connection Index. By doing this we collect baseline information on the average users' levels of nature connectedness and then monitor if subsequent changes that are made to the path environment help to increase users' levels of nature connectedness or not (more information on the nature connection index is available at https://findingnature.org.uk/resources/).

 Through development of the toolkit our aim is to help path managers develop path networks in a way that increases path users' levels of nature connectedness, leading to improvements in their wellbeing and changing people's behaviours so they care for nature and take climate action.

4.1. Methodology

Table 1 summarises the key steps involved in using the Nature Connectedness Placemaking Toolkit.

Table 1.

Step	Relevant Sections of Report
Step 1. Use nature connectedness placemaking toolkit to survey users of a path asking how they connected with nature using that path.	Sections 5.1, 5.2 and 7 See also appendix 1
Step 2. Collate results and calculate average users' levels of nature connectedness using NCI scale.	Sections 5.3.1, 5.3.2, and 8
Step 3. Analyse results from step 2 above, identify areas where scoring could be improved.	
Step 4. Using Path Management Actions table in section 9 identify on-site and/or off-site actions that could help increase path users' levels of nature connectedness.	Section 10
Step 5. Implement actions and improvements identified in step 4.	See examples in section 6
Step 6. After a period of time repeat steps 1 and 2 and determine if users' level of nature connectedness has improved or not.	

5. Nature Connectedness Placemaking Toolkit, Questions and Results.

The toolkit was first trialled at Paths for All's National Path Demonstration Site.

The information was collected using an online electronic form, posters encouraging people to take part in the survey were erected at each end of the path. The survey was accessed using a QR code (image of poster contained in appendix 1).

This trial and the subsequent changes to the toolkit will be discussed in this report.

5.1. Questions

As mentioned, the questions are linked to the Five Pathways to Nature Connectedness.

Because the results would be used to inform changes to the path environment. We ensured that there were path management actions that could be taken linked to each question.

N.B. 'Path management actions' are improvements that can be made to the path environment that have the potential to entice and prompt path users to do something to connect with nature. Examples of path management actions are summarised in section 9.

For example, with question one asking if users noticed natural sounds when using the path, a potential 'path management action' would be to erect signage to encourage people to listen to natural sounds.

Another example would be in relation to question eight that says I like to stop and admire the scenery at this place. A path management action here could be to prune vegetation to open up areas where there is a prominent view.

The questions that were asked are provided below. For each question there were four responses that had different weightings.

1. Please tell us if you notice natural sounds when using this place.
2. Tell us about natural scents you have noticed at this place.
3. Have you ever noticed the different natural textures at this place?
4. Looking at nature in this place affects how I'm feeling emotionally?
5. During conversations with others i talk about good or bad experiences I've had with nature in this place.
6. At this place do you like to take photographs as a way of noticing the beauty that's in nature?
7. I notice the patterns and detail on the smaller things that exist within nature here.
8. I like to stop and admire the views and scenery that are in this place.
9. I like to do what i can to help nature when I'm here.
10. Coming here inspires me to write poetry, music or make art.
11. Noticing seasonal events in this place makes me think more about nature.

The response options in this trial were descriptive rather than being based on a numerical scale. When results were being collated the responses that correlated with having higher levels of nature connection were worth four points, the least connected response option was only worth one point. We calculated an average score for the responses to each question.

Questions and response options to each are provided within appendix 2.

Results and associated weighting calculations from this trial are provided in full in appendix 3.

5.2. Nature Connection Index Questions

As well as the 11 questions mentioned above, we included questions used in the Nature Connection Index (NCI). These were included to enable us to calculate the average users' levels of nature connection. This helps establish a baseline NCI score before any path improvements are carried out. A secondary survey can then be conducted after path

improvements have been implemented and monitor if the average users' levels of nature connection (using the NCI) have increased.

For this part we used the questions and methodology from:

Richardson, M., Hunt, A., Hinds, J., Bragg, R., Fido, D., Petronzi, D. Barbett, L., Clitherow, T. and White, M. (2019). A Measure of Nature Connectedness for Children and Adults: Validation, Performance, and Insights. *Sustainability*. 11(12), 3250; https://doi.org/10.3390/su11123250

For each question there are seven possible responses, the same response options for each question. These are, completely disagree, strongly disagree, disagree, neither agree nor disagree, agree, strongly agree, completely agree.

The six questions asked are:

12. I always find beauty in nature.
13. I always treat nature with respect.
14. being in nature makes me feel very happy.
15. spending time in nature is very important to me.
16. I find being in nature really amazing.
17. I feel part of nature.

The scoresheet used and link to a spreadsheet that converts raw scores to the weighted index can be viewed in appendix 4.

5.3. Results

The results were collated and displayed using a radar graph. This approach is used by the Scotland Place Standard Tool where the results are displayed in an engaging and eye-catching way.

An example of a radar graph displaying results from the Scotland Place Standard Tool is shown below.


Image 1. *Sourced from https://www.ourplace.scot/tool*

5.3.1. Results from questions 1 - 11

The results from questions one to 11 are used to identify the site management actions that can be implemented and prompt users to connect with nature more.

The results collected during from this trial are shown on the radar graph below (chart 1).

Chart 1.

NATURE CONNECTEDNESS PLACEMAKING TOOLKIT, NATIONAL PATH DEMONSTRATION SITE RESULTS
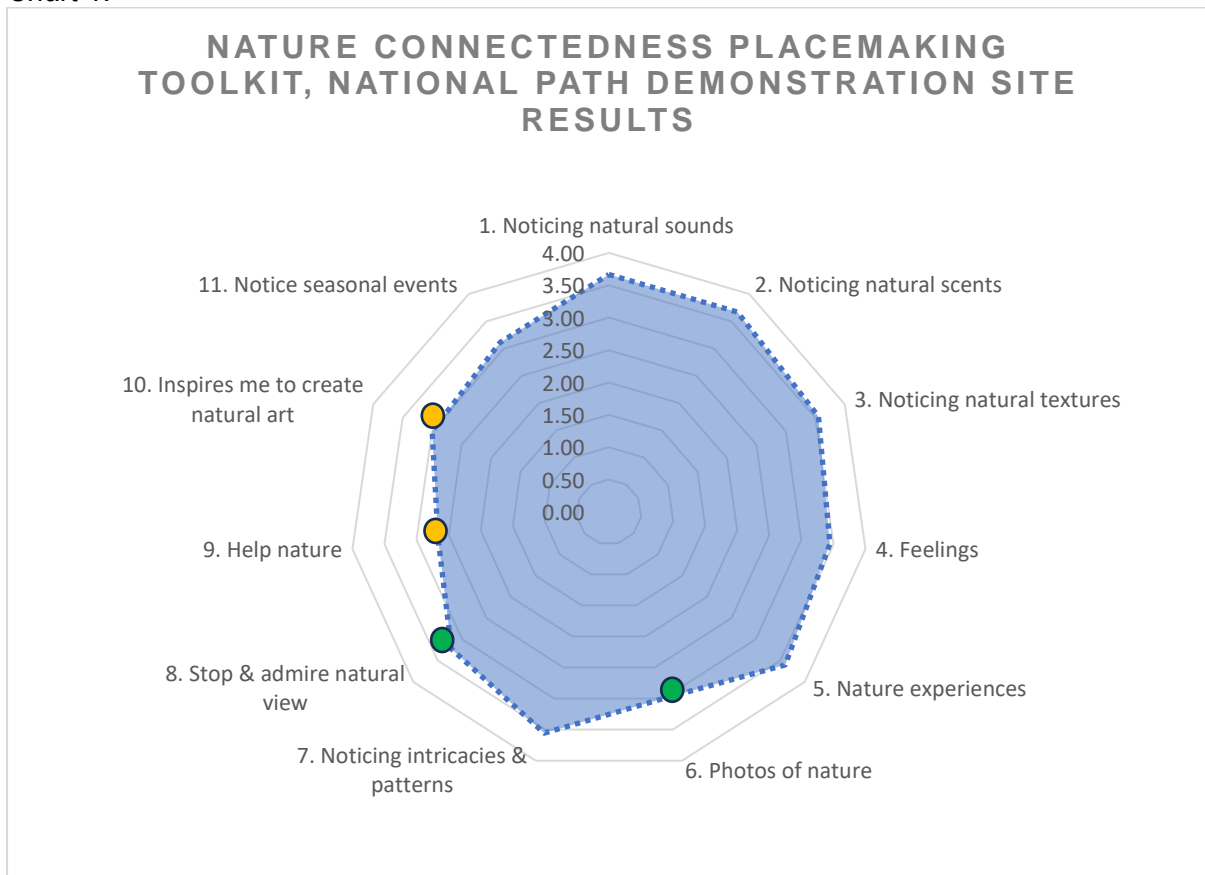
A full breakdown of the results that were collected and how they were weighted is shown in appendix 3.

Once the results were collated and displayed on the radar graph, we were able to identify low scoring areas where there were path management actions that could be implemented to help to increase these scores and thus help users of the site connect with nature more.

During this trial we quickly identified some areas where we felt that the questions could be changed so that the responses would link better with possible path management actions, these changes are described in section 5.3.2 below.

For the purposes of this trial, we focused on making improvements to the site that could increase the score of questions 6, 8, 9 and 10, as these were the lowest scoring areas highlighted in chart 1 above (questions in full below).

Q6. At this place do you take photographs as a way of noticing the beauty that's in nature?
Q8. I like to stop and admire the views and scenery that are in this place.

Q9. I like to do what i can to help nature when I'm here.
Q10. Coming here inspires me to write poetry, music or make art.

Questions nine and ten are questions where we felt the wording could be changed to make the survey work better in future. We included these questions as they linked with the compassion (Q9) and meaning (Q10), two of the pathways from the five pathways to nature connectedness.

Q9. I like to do what I can to help nature when I'm here.

Suggested change for this question / statement is "Coming here inspires me to do things that will help nature".

N.B. An explanation on why we felt this needed to be changed is provided below in section 6.1.1.

Q10. Coming here inspires me to write poetry music or make art.

Suggested change to this question "this place inspires me to reflect on the relationship between people and nature".

5.3.2. Results from NCI Questions (questions 12-17)

As mentioned, in section 4.2 we included questions used to calculate NCI scores.

Using the guidance listed in appendix 4 we calculated the NCI score for each person who responded to the survey. We then used this data to calculate an overall average, to indicate the NCI score of the average users of that path.

For example, during this trial nine users of the path participated in the survey, the NCI score of each participant is shown below in table 2. Using this score, we calculated that the NCI score of the average user to the path at the National Path Demonstration Site at the time of the survey was 55.

Table 2

Response	NCI Score
1	27
2	30
3	71
4	53
5	83
6	86
7	78
8	23
9	45
NCI score of average users of path	**55**

A full break down of results are shown in appendix 5.

By integrating the NCI scores into the toolkit, we can determine if the path management actions that are implemented are successful at improving visitors' levels of nature connectedness.

6. Path management actions

As highlighted in 3.1 methodology section the next phase of the trial was to identify path management actions that would entice future users of the path to engage in activities that will increase their levels of nature connectedness.

As mentioned, in section 5.3.1, we focused on making improvements to the site that could increase the score of questions 6, 8, 9 and 10 as these were the lowest scoring areas.

For this part of the process, the placemaking toolkit includes a Path Management Actions Table (section 8 of this report). This contains suggestions of the improvements that can be done to improve the path environment to entice future users connect with nature more.

The path management actions we implemented during this trial are described in the following sections.

6.1. Path management actions relevant to questions 6 and 8

We identified fixed point photography posts, as being a piece of infrastructure that could be installed, to encourage path users to admire natural scenes, and engage in nature's beauty by taking photographs.

The images below show the post that was installed as part of this trial.

Image 2.

Image 3.

This post was installed in an elevated position, overlooking a small glen, with woodland and a burn running through it.

As shown by the photograph above, the post contains text to highlight that noticing nature is good for us, and to encourage people to take a photograph and share it online.

6.1.1. Path management actions relevant to question 9

As mentioned above this is one of the questions that we felt needed to be changed.

The original question / statement asked, *"I like to do what I can do to help nature when I'm here"*. We think this would work better if people were asked *"does coming here inspire you to do things that will help nature?*

The reason for changing this question is that, from a site management perspective, there isn't   many path management tasks that can be implemented that would encourage path users   do things to help nature while using a path. In some cases, it could have negative, unintended consequences if too many visitors started trying to do things to help nature when using a path.

For example, if visitors started to try and feed birds when visiting a path, it could have detrimental impacts to wildlife if people were using the wrong types of food, or it could benefit some species more than others.

However, we feel that there are things that can be done when managing paths that would inspire users to do things to help nature in their own homes, or in other places.

We installed a bug hotel within an area of recently sown wildflowers. It is installed in a prominent position   where path users will see it.

Image 4.   *Image 5.*

It is hoped that putting the bug hotel and wildflowers in prominent positions, it will inspire path users to do things to help nature in their own gardens or other places. These activities are linked to compassion one of the five pathways to nature connectedness.

N.B. Currently this approach is hypothetical, and we don't know for sure if this approach does inspire people to do things to help nature, more research is required in this area.

Also, by situating wildflowers in easy to access areas, path users will be able to notice the flowers and wildlife that will be active near them, and connect with nature more

6.1.2. Path management actions relevant to question 10.

As mentioned in the introduction, we were keen to include questions that linked to all five of pathways to nature connectedness. The Nature Connection Handbook suggests that activating the meaning pathway could be done through literature, poetry, songs and art. We therefore tried to include ways to use art as path infrastructure to activate the meaning pathway.

We had a discussion with our artist in residence Alec Findlay who had an idea to create a xylotheque structure.

A xylotheque is a library of wood samples used for comparison. It allows people to see and compare the grain and density of wood. Rather than use standard rectangular wood samples, this xylotheque uses walking sticks, with each shaft made from a different native woodland species.

Image 6.

We feel that there are great opportunities to develop community led path projects, which use art as a means to activate the meaning, emotion and beauty pathways to nature connectedness.

We have been using the experiences from the xylotheque installation to develop a project in South Lanarkshire. As part of this project a regular walking group looks out for seasonal events in nature throughout the year. Details of these events are passed to Alec Findlay who then uses them to develop short poems. The poems will then be written on bird boxes and attached to trees beside the path. Examples of the poems that have been created so far are shown below. An example of a bird box from another project is also shown.

a fruit snack
nd a nap please

Image 7.

rusty docks in the meadow feels autumnal.

where'd our warblers and chiffchaffs go?

listen! –that's the start of summer's end–

rattles in the yellow rattle

grasshoppers snap & crackle.

7. What we learned from this first trial.

This trial took place over four weeks in the summer of 2022. Visitor numbers to the Demonstration Site are low at this time of year partly due to there being no students using the nearby college.

The response to the survey was low, with only nine people submitting responses. However, this was enough to try out the methodology.

From this initial trial, we feel that the idea of developing a nature connectedness placemaking toolkit, using it to consult with paths users', and using the results to make changes to the path environment, in a way that will entice path users to connect with nature more, can work well.

We know more work is required on what questions to include, how these should be worded and what responses could be provided.

We didn't feel that having four response options to each question options worked well. When the results were collated on the radar graph in chart 1, it was difficult to make out what the scores were and it didn't have the same striking appearance that we were hoping for, we were hoping for something like that shown on image 1.

We used these observations to make changes to the survey part of the toolkit and try out the changes at another site. The results of this second trial and highlighted in section 7.

8. Updated trial

For this second trial we were keen to try asking similar questions but provide users with different response options. Rather than providing four descriptive options we wanted to try providing seven options, we used the same options to those from the NCI index questions, (highlighted in section 4.2.). These were, *completely disagree, strongly disagree, disagree, neither agree nor disagree, agree, strongly agree, completely agree.*

Updated questions 1 - 11

The questions asked in this second trial were,

1. I take time to notice natural sounds here.
2. I take time to smell natural scents here.
3. I like to feel the different textures in nature when I'm here.
4. Noticing nature here effects how I feel emotionally.
5. I have spoken to others about experiences I've had with nature at this place and how those experiences made me feel.
6. I notice the patterns and detail on the smaller things that exist within nature here.
7. I often pause and look at the scenery here.
8. Coming here inspires me to do things that will help nature.
9. Coming here inspires me to engage with natures beauty in artistic ways.
10. This place inspires me to reflect on the relationship between people and nature.
11. This place inspires me to celebrate seasonal events in nature.

Questions 12 – 17 remained the same as in the first trial.

This trial took place at another site and was used as an opportunity to try out the updated questions.

8.1. Results From Second Trial

The results from this trial are highlighted on chart 2 below, a full breakdown of the results that we received and how these were weighted is shown in appendix 6.

Chart 2.

NATURE CONNECTEDNESS PLACEMAKING
TOOLKIT, BRACO RESULTS
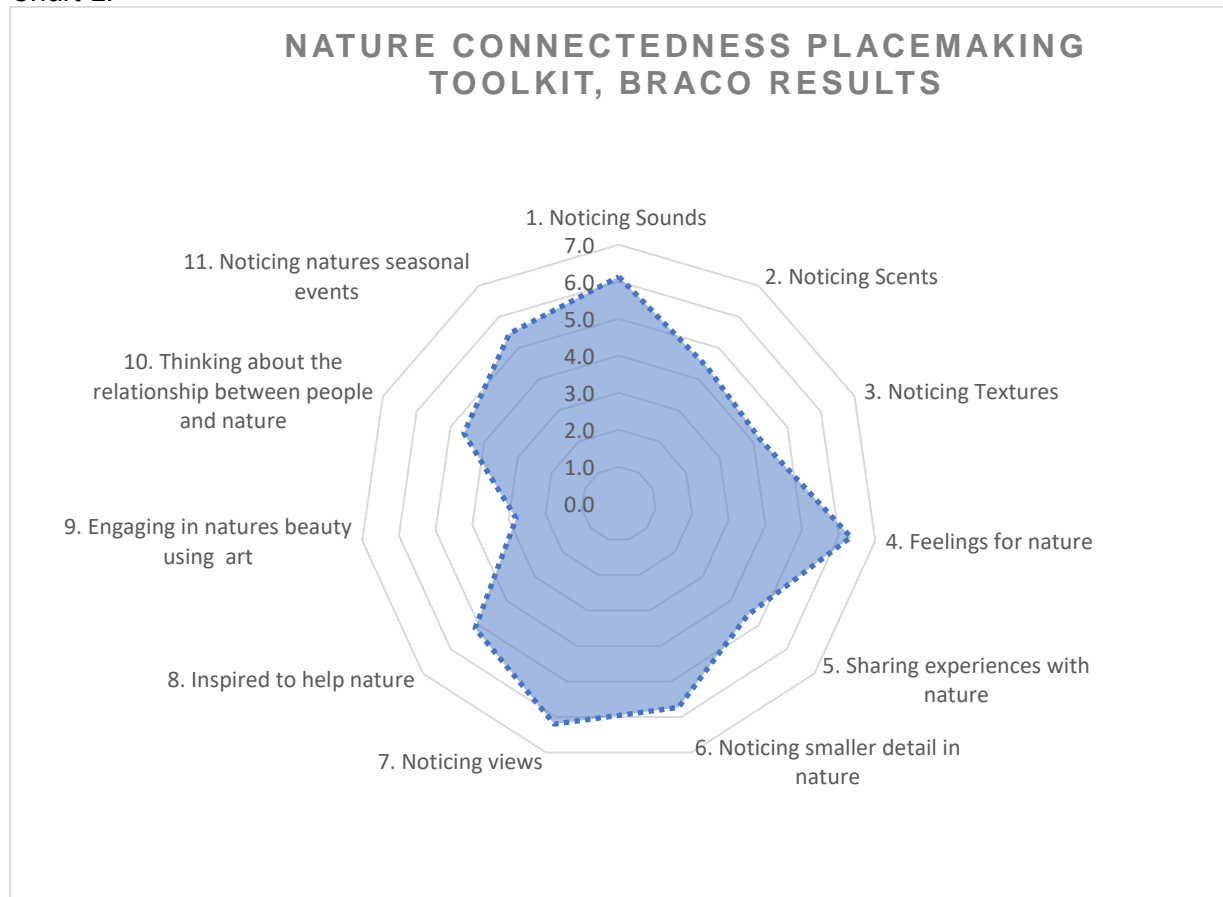
With this trial we were looking to try out the updated questions and response options rather than implement path management actions.

If we were looking to carry out path management actions, we'd likely focus on questions 2,3 and 9 as these had the lowest scores.

2. I take time to notice natural scents here
3. I like to feel the different textures in nature when I'm here.
9. Coming here inspires me to engage with natures beauty in artistic ways.

8.2. NCI Results

We used the same methodology already described in 5.3.2. to calculate the average users NCI score, this is shown in table 3 below.

Table 3. NCI Scores from second trial.

Response	NCI Score
1	100
2	100
3	67
4	54
5	31
6	90
7	50
8	80
9	100
10	65
11	41
12	57
13	100
14	83
15	64
NCI score of average path user	**72**

9. What we learned from this trial

We felt that providing people with seven response options rather than four meant that there was more variation between the scores and meant that when results were displayed on the radar graph, it was easier to identify which areas had lower scores.

Although we did change the wording of some of the questions, we still feel that more work is needed on this part of the toolkit.

We also need to make sure that for each question that is asked there is an on-site or off-site site management action that could be implemented.

Currently we think that question five could be omitted altogether because it's challenging to identify a corresponding path management action.

Section 10 provides an indication of the types of things that could be done that could increase the scores of each question and in doing so increase path users' levels of nature connectedness.

10. Path Management Actions Table

This section is used to provide examples of the path management actions that can be implemented to increase path users   levels of nature connectedness. There are actions associated with each of the questions contained within the toolkit.

The table consists of on-site actions and off-site actions. On site actions refer to infrastructure installations or maintenance activities that could be carried out on-site.

Off-site actions are those which take place remotely but could influence people's behaviour when they are using the path again. For example, a manager of a nature reserve could use social media to encourage visitors to engage in particular nature connection activities at certain times of year or encourage visitors to use social media to share their recent experiences when visiting the site.

For example, the results from our second trial of the toolkit (shown in section 8 chart 2) show that the 3 lowest scoring questions were.

2. I take time to notice natural scents here.
3. I like to feel the different textures in nature when I'm here.
9. Coming here inspires me to engage with natures beauty in artistic ways.

This table would then be used to identify what actions could be implemented that could then help activate the 5 pathways to nature connectedness and help future path users increase their levels of nature connectedness.

After managements actions have been implemented the toolkit can then be used again to determine if the actions have been successful at increasing path users' levels of nature connectedness. This would be done by comparing the NCI data that was collected. For example, once changes have been made it would be possible to consult with users of the path again through asking path users to take part in the survey again and monitor is there have been changes to the scores that have been collated or to the NCI score that's calculated.

N.B. This table is for indicative purposes at the moment, this is an area where we anticipate more work being required and it's likely that'll continue to grow as more people being to use the toolkit.

Path Management Actions Table

Question	Path Management Actions
1. I take time to notice natural sounds here.	**On-site Actions** On site signage prompting people to notice natural sounds. Suitably placed seating next to features where people could notice natural sounds e.g., rivers https://www.youtube.com/watch?v=Ji3Zj0oR8Zw When developing routes to promote (i.e., leaflets) where possible develop routes where users will experience natural sounds, e.g., away from roads, through woodland, next to flowing water. **Off-site Actions** Social media campaign ran by managers of the path/site to encourage users to notice natural sounds (e.g., https://www.pathsforall.org.uk/wod-tip-and-story/walking-with-nature-birdsong).
2. I take time to smell natural scents here.	**On-site Actions** On site signage promoting people to notice natural scents. Planting species with strong scents **Off-site Actions** Social media campaign ran by managers of the path/site to encourage users to notice natural scents (e.g., https://www.pathsforall.org.uk/whats-on/event-details/sensing-nature-competition).
3. I like to feel the different textures in nature when I'm here.	**On-site Actions** On site signage prompting people to notice natural textures. Development of sensory trails e.g., https://www.sensorytrust.org.uk/resources/guidance/sensory-trail-design **Off-site Actions** Social media campaign ran by managers of the path/site to encourage users to notice natural textures.
4. Noticing nature here effects how I feel emotionally.	**On-site Actions** Suitable onsite interpretation that's aims to provoke an emotional response (e.g., interpretation on woodland loss or biodiversity loss may affect how people feel emotionally).

	Development of community art projects and associated art installations on path networks. **Off-site Actions** Social media campaigns to encourage people to watch wildlife feeding or playing and share how it make them feel.
5. I have spoken to others about experiences I've had with nature at this place and how those experiences made me feel.	
6. I notice the patterns and detail on the smaller things that exist within nature here.	**On-site Actions** Installation on infrastructure containing magnifying glasses e.g., https://caledoniaplay.com/product/magpost-large-2/
7. I often pause and look at the scenery here.	**On-site Actions** Maintain vegetation to open-up views and maintain existing views. Creation of rest points where there is a view e.g., https://www.pathsforall.org.uk/cmp-story/improving-spaces-to-connect-with-nature-seating Construction of viewing platforms e.g., https://www.urbanrealm.com/buildings/680/Flanders_Moss_viewing_tower.html Installation of fixed-point photography posts to entice people to stop and notice scenery (see section 6.1).
8. Coming here inspires me to do things that will help nature.	**On-site Actions** Promotion on site relevant citizen science surveys. Environmental enhancements in key areas that'll encourage visitors to do similar things at home (see section 6.2). **Off-site Actions** Promote conservation volunteering opportunities to encourage and provide opportunities for visitors to get involved in doing things that'll help nature.
9. Coming here inspires me to engage with natures beauty in artistic ways.	**On-site Actions** Install fixed-point photography posts to entice people to stop and notice scenery and photograph it (see section 6.1). Install signage that encourages visitors to use natural materials to make pieces of temporary art. (e.g., https://www.childhoodbynature.com/the-beauty-of-ephemeral-nature-art/).

	Off-site Actions Art and photography competitions Social media incentives
10. This place inspires me to reflect on the relationship between people and nature.	**On-site Actions** Art installations that prompt path users to reflect on their relationship with nature, preferably developed with communities and path users. Interpretation that encourages visitors to reflect on the relationship between people and nature.
11. This place inspires me to celebrate seasonal events in nature.	**On-site Actions** Art installations that are linked to seasonal events in nature

11. Conclusions

Although the trials that have taken place so far have been short, they have been enough to try out the methodology of the Nature Connectedness Placemaking Toolkit. These trials demonstrate that the toolkit can be used successfully, to collect information on how path users connect with nature when using a path and identify ways of improving the path environment through installation of infrastructure and maintenance tasks to enable future users to increase their levels of nature connectedness.

As noted already, we do feel that more work is needed on the questions that are asked. We feel that the questions used on the second trial were an improvement to those used during the first trial, but there are still some questions where it is difficult to find suitable path management actions and we'd like to add a question relating to accessibility of the path.

Currently question eight is hypothetical, in that we're assuming biodiversity enhancements and providing homes for nature in prominent positions on a path could inspire visitors to do things for nature. More research is required here to find out if these actions would inspire people to do more to help nature or not.

We integrated the Nature Connection Index questions as a way of gathering baseline and follow-up information. The intention of this is to check if the improvements that have taken place on the path have been successful in improving users' levels of nature connectedness. So far, we have not tried follow up surveys at the National Path Demonstration Site to figure out if the improvements do lead to path users having higher levels of nature connectedness.

Although this trial has focused on the toolkits use on paths, there is potential for it to be used in other areas. For example, it could be used in parks, and may have potential to be used as an urban planning tool.

Currently we've used Excel spreadsheets as a way of working out the results that are used on the radar graphs and to calculate the NCI scores. This could be time consuming if handling large amounts of data. As part of the tool kits future development, it would be beneficial to find a more streamlined way of doing this.

The tool kit could also have further benefits around enhancing biological diversity around the path environment, this could help create nature networks and join up fragmented habitats.

Through the work that Paths for All does, we know that a welcoming and attractive path environment can increase footfall, therefore we feel that the toolkit also has the potential to encourage people to be more active and use paths more for walking, wheeling, or riding.

12. Next steps

We are interested in developing this toolkit further, as mentioned we think it has a lot of potential, but we know that some areas still require more work. In order to continue with its development our next steps are as follows.

1. Send a copy of this report to others with an interest in nature connectedness and path development and seek their feedback.
2. Find potential stakeholders to collaborate with.
3. Through collaboration work on the questions that are currently asked and update these as needed.

4. Through collaboration find other sites where a longer-term trial could be carried out and conduct a follow-up survey to assess if changes to the path environment increase NCI scores.
5. Find sources of funding that could be used to help this piece of work move forward. Currently staff capacity has been an issue and there may be opportunities for setting up an online platform that will help generate score easily without using Excel.

Appendices

Appendix 1.

Appendix 2, Questions and responses related to report section 4.1.

1. Please tell if you notice natural sounds when using this place.
e.g., birds singing, water flowing, leaves rustling

○ I enjoy listening out for natural sounds and I like to stop to listen 😃 🎵

○ Sometimes I notice natural sounds 🙂

○ I don't notice any natural sounds 😐

○ It's not something I've ever thought about listening to 👎

2. Tell us about natural scents you have noticed at this place.
e.g., flowers, plants, animal scents

○ I enjoy natural scents in this place, and I sometimes spend time sniffing them 😃 ❤️

○ I sometimes notice natural scents but it's not something I go looking for 🙂

○ I have never noticed any natural scents 😬

○ I'm not interested in noticing natural scents 👎

3. Have you ever noticed the different natural textures at this place?
e.g., smooth bark on trees, rough feeling leaves, cold rocks

○ Sometimes I deliberately feel the different textures in nature 😃

○ Occasionally I will notice that there are different textures in nature 🙂

○ Its not something I've ever done on purpose 😐

○ I have no interest in noticing natural textures 👎

4. Looking at nature in this place sometimes effects how I'm feeling emotionally.

e.g., happy, sad, watching squirrels chasing each other made you feel much happier.

○ I look for nice things in nature because I know it'll make me happier 😃 ❤️

○ Occasionally I will notice something in nature that makes me happy or sad 🙂

○ Nature doesn't affect how I feel 😐

○ Noticing nature isn't something I'm interested in 👎

5. During conversations with others I talk about good or bad experiences I've had with nature at this place.

e.g., one time I saw an adult roe deer with a spotted fawn, it was very cute and made me happy.

○ When I've had an experience with nature here, I sometimes tell others about it and how it made me feel. 😃 ❤️

○ I will occasionally share experiences I've had with nature here, but I rarely talk about how it makes me feel 🙂

○ Although I find nature interesting, I don't talk to others about it 😐

○ I don't find nature interesting, so I don't talk about it 👎

6. At this place do you take photographs as a way of noticing the beauty that's in nature?

e.g., taking photographs of a lovely view or flower

○ I occasionally take photos of things I see in nature here, and post them on social media 😍 📷

○ I occasionally take photos of things I see in nature here 👍 📷

○ It's very rare that I take photos of nature here 🙂

○ I don't find beauty in nature at this place 👎

7. I notice the patterns and detail on the smaller things that exist within nature here.

e.g., patterns on the leaves of trees, flower heads, colors of bird feathers

○ During each visit 😍

○ Most of the time 👍

○ Very rarely ☹️

○ Never 👎

8. I like to stop and admire the views and scenery that are in this place.

○ During each visit 😍

○ Most of the time 👍

○ Very rarely ☹️

○ Never 👎

9. I like to do what I can to help nature when I'm here.

e.g., feeding nature, picking up litter, taking part in a citizen science survey

○ During each visit 😍

○ Most of the time 👍

○ Very rarely ☹️

○ Never 👎

24

10. Coming here inspires me to write poetry, music or make art.

e.g., using natural materials to make art, write about nature and how it makes me feel.

◯ Strongly agree 🤩   ◯ Agree 👍   ◯ Disagree 👎

◯ Strongly disagree 😡

11. Noticing seasonal events in this place makes me think more about nature.

e.g., noticing the first swallow of the year or leaves changing during autumn

◯ Strongly agree 🤩   ◯ Agree 👍   ◯ Disagree 👎

◯ Strongly disagree 😡

Appendix 3

Q1. Please tell if you notice natural sounds when using this place.

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
I enjoy listening out for natural sounds and I like to stop to listen	4	6	24
Sometimes I notice natural sounds	3	3	9
It's not something I've ever thought about listening to	2		0
I don't notice any natural sounds	1		0
		TOTAL	33
		MEAN	3.67

Q2. Tell us about natural scents you have notice at this place.

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
There are some great natural smells in this place, and I spend time smelling them	4	7	28
I sometimes notice natural smells but it's not something I go looking for	3	1	3
I have never noticed any natural scents	2	1	2
I'm not interested in noticing natural scents	1		0
		TOTAL	33
		MEAN	3.67

Q3. Have you ever touched leaves, bark on trees or anything else natural when you've been in this place?

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
I love noticing that there are lots of different textures in nature, spikey things, rough things, smooth things and more	4	6	24
Occasionally I will notice that there are different textures in nature	3	2	6
It's not something I've ever done on purpose	2	1	2
I have no interest in noticing textures in nature	1		0

26

TOTAL	**32**
MEAN	**3.56**

Q4. When I notice nature at this place it sometimes changes how I'm feeling.

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
I like to spend time trying to observe nature because I know it'll make me happier	4	6	24
Occasionally I will notice something in nature that makes smile	3	1	3
Nature doesn't affect how I feel	2	2	4
Noticing nature isn't something I'm interested in	1		0

TOTAL	**31**
MEAN	**3.44**

Q5. During conversations with friends, I talk about experiences I've had with nature at this place.

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
When I have a notable experience in nature, I like to tell others about it and how it made me feel.	4	3	12
I will occasionally share experiences I've had with nature, but I rarely talk about how it makes me feel	3	4	12
Although I find nature interesting, I don't talk to others about it	2	2	4
I don't find nature interesting, so I don't talk about it	1		0

TOTAL	**28**
MEAN	**3.111111**

Q6. Have you ever used photography as a way of noticing the beauty that's in nature?

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
I take lots of photos of the beautiful things I see in nature here	4	4	16
I occasionally take photos of beautiful things I see in nature	3	1	3
It's very rare that I take photos here	2	4	8

I don't find beauty in nature at this place	**1**

TOTAL	**27**
MEAN	**3.00**

Q7. I notice the patterns and detail on the smaller things that exist within nature here.

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
During each visit	**4**	6	**24**
Most of the time	**3**	2	**6**
Very rarely	**2**	1	**2**
Never	**1**		**0**

TOTAL	**32**
MEAN	**3.56**

Q8. I like to stop and admire the views and scenery that are in this place.

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
During each visit	**4**	5	**20**
Most of the time	**3**	2	**6**
Very rarely	**2**	1	**2**
Never	**1**	1	**1**

TOTAL	**29**
MEAN	**3.22**

Q9. I like to do what I can to help nature when I'm here.

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
During each visit	**4**	3	**12**
Most of the time	**3**	2	**6**
Very rarely	**2**	2	**4**
Never	**1**	2	**2**

TOTAL	**24**
MEAN	**2.67**

Q10. Coming here inspires me to write poetry, music or make art.

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
Strongly agree	**4**	4	**16**

Agree	3	2	6
Disagree	2	2	4
Strongly disagree	1	1	1
		TOTAL	27
		MEAN	3.00

Q11. Noticing seasonal events in this place makes me think more about nature.

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
Strongly agree	4	4	16
Agree	3	3	9
Disagree	2	1	2
Strongly disagree	1	1	1
		TOTAL	28
		MEAN	3.11

Appendix 4.

Nature Connection Index (NCI)

The following questions are about you and nature. By nature we mean all types of natural environment and all the plants and animals living in them. Nature can be close to where you live in towns; the countryside or wilderness areas further away.

Please tell us how often you agree with each of the following statements, by putting a tick in the relevant box.

CLARIFICATION TEXT IN INTERVIEWER INSTRUCTION USED IN RESPONDENT IS UNCLEAR: By nature I mean all different types of natural environment and the things that live in them. It can be close to where you live or further away, and includes green spaces in towns and cities (such as your own and other people's gardens, parks, playing fields and allotments); the countryside (such as farmland, woodland, hills and mountains); and watery places (such as streams, canals, rivers, lakes, the coast and the sea.)

	Completely Disagree	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree	Completely Agree
1. I always find beauty in nature							
2. I always treat nature with respect							
3. Being in nature makes me very happy							
4. Spending time in nature is very important to me							
5. I find being in nature really amazing							
6. I feel part of nature							

NCI items and weighted points index for each point on the response scale – conversion spreadsheet is available.

Statement	Response Scale Rating						
	1	2	3	4	5	6	7
1—I always find beauty in nature	0	1	2	3	5	9	15
2—I always treat nature with respect	0	0	1	2	4	6	10
3—Being in nature makes me very happy	0	1	2	3	6	10	16
4—Spending time in nature is very important to me	0	1	2	3	6	11	19
5—I find being in nature really amazing	0	1	2	3	6	10	17
6—I feel part of nature	0	1	2	4	7	13	23

Richardson, M., Hunt, A., Hinds, J., Bragg, R., Fido, D., Petronzi, D. Barbett, L., Clitherow, T. and White, M. (2019). A Measure of Nature Connectedness for Children and Adults: Validation, Performance, and Insights. *Sustainability*. 11(12), 3250; https://doi.org/10.3390/su11123250

https://findingnature.org.uk/resources/

Appendix 5

Resp ID	A) I always find beauty in nature	B) I always treat nature with respect	C) Being in nature makes me very happy	D) Spending time in nature is very important to me	E) I find being in nature really amazing	F) I feel part of nature	Check	Resp ID	Connection to Nature Index
1	4	4	5	5	5	4		1	27
2	5	6	5	5	4	4		2	30
3	6	7	7	7	6	5		3	71
4	6	7	6	6	5	5		4	53
5	6	6	7	7	6	7		5	83
6	7	6	7	7	7	6		6	86
7	7	7	6	7	7	5		7	78
8	5	5	4	5	4	3		8	23
9	6	6	5	6	5	5		9	45
							Incomplete Data	0	0
							Incomplete Data		

Site user / visitor	Connection to Nature Index
1	27
2	30
3	71
4	53
5	83
6	86
7	78
8	23
9	45
Mean	55

Appendix 6.

1. I take time to listen to natural sounds here

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
Strongly disagree	1	0	0
Disagree	2	0	0
Somewhat disagree	3	0	0
Neutral	4	1	4
Somewhat agree	5	3	15
Agree	6	4	24
Strongly agree	7	7	49
		TOTAL	92.0
		MEAN	6.1

2. I take time to notice natural scents here

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
Strongly disagree	1		0
Disagree	2	2	4
Somewhat disagree	3	3	9
Neutral	4	4	16
Somewhat agree	5	0	0
Agree	6	5	30
Strongly agree	7	1	7
		TOTAL	66
		MEAN	4.4

3. I like to feel the different textures in nature when I'm here.

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
Strongly disagree	1	0	0
Disagree	2	3	6
Somewhat disagree	3	1	3
Neutral	4	5	20
Somewhat agree	5	3	15
Agree	6	2	12
Strongly agree	7	1	7
			0

32

TOTAL	63
MEAN	4.2

Noticing nature here effects how I feel emotionally.

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
Strongly disagree	1	0	0
Disagree	2	0	0
Somewhat disagree	3	0	0
Neutral	4	0	0
Somewhat agree	5	4	20
Agree	6	2	12
Strongly agree	7	9	63
		TOTAL	95
		MEAN	6.3

5. I have spoken to others about experiences I've had with nature at this place and how those experiences made me feel.

POSSIBLE RESPONSES POSSIBLE RESPONSES	WEIGHTING WEIGHTING	No. of respondents who chose this option	SCORING
Strongly disagree	1	0	0
Disagree	2	4	8
Somewhat disagree	3	1	3
Neutral	4	3	12
Somewhat agree	5	0	0
Agree	6	3	18
Strongly agree	7	4	28
		TOTAL	69
		MEAN	4.6

6. I notice the patterns and detail on the smaller things that exist within nature here.

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
Strongly disagree	1	0	0
Disagree	2	0	0
Somewhat disagree	3	0	0
Neutral	4	2	8
Somewhat agree	5	5	25
Agree	6	3	18

Strongly agree	7		
		5	35
		TOTAL	**86**
		MEAN	**5.7**

7. I often pause and look at the scenery here.

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
Strongly disagree	1	0	0
Disagree	2	0	0
Somewhat disagree	3	0	0
Neutral	4	0	0
Somewhat agree	5	4	20
Agree	6	4	24
Strongly agree	7	7	49
			0
		TOTAL	**93**
		MEAN	**6.2**

8. coming here inspires me to do things to help nature

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
Strongly disagree	1	0	0
Disagree	2	3	6
Somewhat disagree	3	0	0
Neutral	4	2	8
Somewhat agree	5	1	5
Agree	6	5	30
Strongly agree	7	4	28
		TOTAL	**77**
		MEAN	**5.1**

9. Coming here inspires me to engage with natures beauty in artistic ways.

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
Strongly disagree	1	0	0
Disagree	2	1	
Somewhat disagree	3	2	
Neutral	4	5	
Somewhat agree	5	2	10
Agree	6	3	18

34

Strongly agree	7	2	14
		TOTAL	42
		MEAN	2.8

10. This place inspires me to reflect on the relationship between people and nature.

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
Strongly disagree	1	0	0
Disagree	2	2	4
Somewhat disagree	3	2	6
Neutral	4	3	12
Somewhat agree	5	3	15
Agree	6	3	18
Strongly agree	7	2	14
		TOTAL	69
		MEAN	4.6

11. This place inspires me to celebrate seasonal events in nature.

POSSIBLE RESPONSES	WEIGHTING	No. of respondents who chose this option	SCORING
Strongly disagree	1	0	0
Disagree	2	1	2
Somewhat disagree	3	2	6
Neutral	4	2	8
Somewhat agree	5	1	5
Agree	6	2	12
Strongly agree	7	7	49
		TOTAL	82
		MEAN	5.5

Appendix 7, Feedback received from Derby Universities Nature Connectedness Research group and from NatureScot.

Feedback from NatureScot

General / overall

It makes an interesting read.

Mostly it seems fine.

Introduction to Nature Connectedness and the Five Pathways to Nature Connectedness

The first para seemed a little sweeping and hard to justify: *Nature connectedness examines the relationship between people and the rest of nature. This relationship is important for our wellbeing and for nature conservation. People who are more connected with nature, tend to have greater eudemonic well-being, meaning they are functioning well, and have higher levels of self-reported personal growth. In addition to this, they are more likely to do things to help nature and live in a way that has less on an impact on our environment.* If that were entirely true then all farmers, fishers, foresters, gamekeepers etc. would be guardians/stewards of nature: but they are not – collectively at least. It's the emotional connectivity that is key, so amending to 'People who are more <mark>emotionally</mark> connected to nature' might be better.

Methodology for measuring nature connectedness

██████████ has been exploring the subject of measuring nature connectedness with the UK Nature Connection network. In August 2023 she canvassed their views on the evaluation measures they were using, with the aim of trying to standardise the measure used for nature-based outdoor learning projects. The Nature Connection Index (NCI) is used in NatureScot's Nature Omnibus Survey and in Natural England's MENE survey. Her experience, as an Outdoor Learning Adviser, is that the Inclusion of Nature in Self (INS) scale is a useful quick before and after measure for short informal education work.

Repeat v. one-off visits

██████ wondered if the place-nature connection response and experience of a repeat/ regular path user might be very different to a one-off visit, in what people notice and feel. Is this something you've considered?

Trial question results

We agree that the questions in the second trial are better and more consistently written than in the first trial.

Path Management Actions

Below are some suggestions for additional actions and examples:

- **Q1.** Could it include examples of sound walks that connect people to the past?
  https://walklistencreate.org/walkingpiece/lockdown-sound-walk/

  https://www.shetland.org/listings/stenness-sound-walk

  Could it include sounds made by people using natural materials e.g. xylophone made using different lengths of wood? (there was one in the community woods above Great Glen House in Inverness)

- **Q2**. Natural scents can depend on the weather conditions (e.g. rain accentuates the smell of the soil, warm temperatures accentuate the scent of pine resin, honeysuckle flowers, etc). The scent from strong-smelling plants can vary depending if e.g. people brush past them, tread on them or crush the leaves. Perhaps need to remember that some people can find plant scents unpleasant or overpowering e.g. garlic, flowering currant. https://www.pathsforall.org.uk/whats-on/event-details/sensing-nature-competition weblink does not work.

- **Q3.** There could be scope for creative on-site interpretation to prompt people to notice natural textures e.g. a picture frame against the bark of a tree / moss / lichen, etc. with the words 'feel me'.

- **Q4.** The art in nature work looks really great. Calgary Arts on the Isle of Mull has a really nice trail https://www.calgary.co.uk/art/art-in-nature/. NatureScot is exploring a doctoral research project with Queen Margaret University (QMU) around nature and art, which might also provide some insights.

- **Q5**. You've suggested removing this question as it is difficult to identify a corresponding path management action, but perhaps you could re-phrase this question to 'I have shared my experiences with others'? On-site Action might be signage prompting people to 'share what you saw here today' or 'share how your trip made you feel', and Off-site Action might be social media / hashtag to promote the sharing of the experience. The hashtag could be site specific, activity specific or general like #natureconnections.

- **Q6**. Another off-site action could be social media campaigns as well. Things like species ID or journalling could encourage people to pause longer to take in their surroundings and notice more detail. Another on-site or off-site action could be prompting people to notice repeating patterns in nature – there is lots of material on this e.g. https://blog.scienceborealis.ca/the-themes-of-nature-exploring-repeating-patterns-in-the-natural-world/

- **Q7**. Fixed-point photography posts can also encourage observation of landscape change e.g. https://cairngorms.co.uk/photo-posts/ (this is also an example of a citizen science project). Another nature photography example https://www.nature.scot/making-space-nature-photography-wildlife-filmmaker-libby-penman

- **Q8.** On-site actions - the Bee hotel in section 6.2 is a good example. Signage could also include prompts like 'how to do this at home' or 'could you have native wildflowers in your garden?' with a link to more information about how to achieve this – to both inspire people with ideas to make it as easy as possible to act.

- **Q9**. On-site Action could go further and encourage the sharing of photographs from the fixed points (as mentioned in section 6.1), which could also help support Q5 (sharing experiences with others). Example of art and nature competitions on NNRs https://www.nature.scot/professional-advice/land-and-sea-management/managing-access-and-recreation/increasing-participation/tune-nature and https://www.nature.scot/sites/default/files/2023-08/Gallery%20Poster%20-%2016%20September%202023.pdf

- **Q10.** Examples of art trail on NNR https://www.nature.scot/taynish-art-trail-2023. Collaborative project using art, science and Gaelic language that reflects on the changes in the distribution of wildlife due to climate change https://www.nature.scot/nature-heroes-birds-mouth

- **Q11.** Actions to celebrate seasonal events in nature could be linked to many of the previous actions including Q1 (natural sounds), Q2 (natural scents), Q6 (natural patterns and details), Q7 (scenery).

Feedback from Derby University Nature Connectedness Research Group.

We've had a look. It's a great approach overall and interesting methodology. Might be good to reduce the number of questions – but there are examples of actions for each question.

Some thoughts on the report itself:

- Starting with a description of nature connectedness and the pathways would be useful.
- P 15 *Currently we think that question five could be omitted altogether because it's challenging to identify a corresponding path management action. Pe*
Perhaps a prompt to share photos on social media would be one way this could be done. Or people could write or text a message that could be shared publicly - but this is perhaps a different sort of thing.
- P 20 ref to Q5 as being about helping nature – is that not Q8?

Re Q 10 – I wonder if people would be more inclined to think about their own relationship with nature than the people-nature relationship? Or perhaps both questions are of interest …