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RESEARCH ARTICLE

Curating landscapes to encourage care for biodiversity through arts and citizen science

 Elisa Olivares Esquivel  | Simone Farris | Catherine Higham

 School of Architecture and Landscape,
University of Sheffield, Sheffield, UK
Correspondence
 Elisa Olivares Esquivel
Email: elisa.olivares@sheffield.ac.uk
Funding information
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Abstract

1. This study investigates how combining Citizen Science and Art workshops within curated wildflower meadows can generate repeated, positive experiences with nature, and foster a sense of care for it. The project aimed to increase awareness, encourage responsibility, and develop competencies related to urban nature.
2. We conducted 16 free-entry workshops in four diverse urban parks in Sheffield, UK, engaging 73 community members and local volunteers. Activities included pollinator surveys and art methods such as cyanotype printing, microscope drawing, and weaving, all focused on the newly installed meadows.
3. Participants reported significant positive emotions, describing the sessions as 'informative, creative, therapeutic, relaxing.' The activities encouraged the acquisition of new knowledge (e.g., distinguishing between pollinator species) and helped participants appreciate the microscopic scale of urban nature.
4. The workshops incentivised care for nature by fostering community connections and inspired participants to launch their own nature initiatives. However, several barriers to developing a sense of care were identified, including a lack of free time, community resources, and funding.
5. This research shows that positive and intentional interactions with urban nature such as curated landscapes can trigger the care for nature process within individuals and communities when four elements are considered: the environment and the natural typology, provision of knowledge and skills, encouragement of curiosity and wonder, and community engagement. Further research on encouraging action is needed.

KEYWORDS

arts, care for nature, citizen science, engagement, meadows, urban nature

1 | INTRODUCTION

Care was defined by Fisher and Tronto (1990), among others, as a 'species activity that includes everything we do to maintain, continue

and repair our world' (p.40), where 'our world' includes the environment (Tronto, 2013). However, the environment and the biodiversity (sensu UNEP Nations, 1992) inhabiting our world are threatened by many human pressures, including habitat loss, urbanisation and

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intensification of agriculture (IPBES, 2019). According to the IUCN, 28% of all global assessed species are threatened with extinction, and in Europe, around 10% of wild bees are at risk (IUCN, 2025). In the UK, a large proportion of terrestrial species continue to decline in abundance and distribution (Burns et al., 2023).

Despite efforts to develop pro-environmental behaviour through theoretical frameworks, educational activities, and policy incentives (Acciai & Capano, 2021; Lange, 2023; Portus et al., 2024), even individuals who support environmental causes tend to adopt few pro-environmental behaviours. This gap has been attributed to factors in the personal sphere (attitudes and capabilities) and social context (norms and regulations) (Saunders et al., 2006). Therefore, developing methods to incentivise care for nature is still needed.

Although an in-depth discussion on the concept of Nature is outside the scope of this paper, it is necessary to define the relevant concepts. From some in the Western tradition, nature has been seen as something 'other' than human and only limitedly affected by human activity (i.e. 'the Wild') (Soper, 1995). More recent views of nature have included human-made environments (e.g. urban green spaces) as part of nature (Bratman et al., 2012). Similarly, Newman and Dale (2013) defined nature in urban spaces as 'mundane' as opposed to 'wild', though arguing that both types are important and beneficial. Soga and Gaston (2020) maintain the same position, though restricting the concept of nature to those living organisms that are self-sufficient and independent of direct human activity to survive. In this paper, urban green spaces are included in the concept of nature. Considering that the majority of the world's population will be living in cities by 2050 (United Nations Convention on Biological Diversity, 2018), caring for green spaces is important. These spaces enhance health and well-being in humans, promote social interaction, provide food and shelter for urban wildlife and help reduce water and air pollution (Aronson et al., 2017; Hewitt et al., 2020; World Health Organization, 2016). Therefore, the use of green spaces in cities to incentivise care for nature is of vital and timely importance.

The human eye seems to struggle to perceive the loss of biodiversity. Pauly identified this phenomenon in fisheries and called it the *Shifting baseline syndrome* (SBS) (Pauly, 1995; Papworth et al., 2009). For Pauly and later Papworth, due to the SBS there is a normalisation of the progressive degradation of the natural environment, which proves to be problematic when the constantly shifting line becomes the reference for conservation and restoration goals (Colléony et al., 2019; Pauly, 1995; Soga & Gaston, 2018). Similarly, Gobster et al. (2007) argue that it is challenging for humans to perceive the ecological value of an environment, and instead, they tend to rely on the aesthetic value as a proxy. However, the aesthetic value is subjective and culturally rooted (e.g. Nassauer, 1995), thus ecologically important environments are at times considered anti-aesthetic and vice versa.

An explanation for the *Shifting baseline syndrome*, according to Soga and Gaston (2018), is the *extinction of experience*, presented in *The Thunder Tree* (Pyle, 1993). According to Pyle (1993), humans have fewer experiences with nature and are losing their affective

connection with it. For Pyle and other authors, this lack of affective connection has repercussions for the willingness to protect nature (Kals et al., 1999). For Clayton et al. (2017), this is not an *extinction* but a *transformation of the experience*, where experience with nature is a process that develops over time and occurs within any given social and cultural context. It is an active engagement with nature that can have an effect on the person, e.g. emotionally and intellectually; it can generate knowledge and/or skills and can be reinterpreted multiple times. The experience with nature has changed with the transformation of (urban) society. In relation to this transformation, Soga and Gaston (2020) developed the analysis of the *dimensions of the experiences* (e.g. positive vs. negative, degree of mediation, etc.), and concluded that generating a higher number of positive human interactions (i.e. *positive repeated experiences*) with nature can trigger a higher number of positive outcomes for humans and nature. In this vein, we propose urban green spaces as an important asset for the generation of repeated positive experiences with nature, and ultimately, incentivise care for it.

1.1 | Care for nature

Similar to Fisher and Tronto (1990), for Nassauer (2011), care for nature encompasses the maintenance and protection of what we *pay attention* to; therefore, care for nature is deeply entwined with cultural normative and aesthetic values. Care for the landscape, according to Nassauer (1995, 2011), is shown through *cues to care*, or elements culturally rooted, that inform users that a landscape is being cared for or attended. These *cues* can vary from place to place, but some of the most common are: trimmed edges, pruned trees, colourful flowers, etc. For Nassauer, a mechanism to incentivise the public to care for neglected ecosystems is by incorporating local *cues to care* in what she calls *Messy ecosystems in orderly frames* (Nassauer, 1995). Framing a 'messy scrub' important to birds with clipped edges that signpost the habitat shows that it is valuable and cared for. One drawback of this view is that the importance of other kinds of visible care for nature could be undervalued if not consistent with cultural norms (Jacobs & Wiens, 2024). Not only that, but some highly culturally attached *cues to care* might be detrimental for biodiversity, for example, extensive areas of mown lawn, which have a negative effect on invertebrate populations (Francoeur et al., 2021) or overuse of herbicides in urban settings to keep streets tidy can have a detrimental in water quality and a negative effect on non-target organisms (Dittemore et al., 2025). As Tronto (1998) explains, to care properly, skills, knowledge and judgement are required, and this needs constant updating. Lack of resources and lack of time may have a negative impact on the way we care.

Other authors have defined care for nature as a process. For Fisher and Tronto (1990), the process of caring starts with becoming aware of the existing caring needs (*Caring about* stage), followed by taking responsibility for the caring (*Caring of*) and delivering it (*Care giving*), while developing competence in the process. The process has a feedback stage where those caring and those cared for discuss

how to improve the system (Tronto, 1998, 2013). More recently, this framework has been applied to practices of green care (Moriggi et al., 2020), highlighting how acts and forms of caring practised in natural contexts may also improve care for nature.

Another example of the care process is the framework proposed by Musacchio (2013), where the care process starts by leveraging human appreciation for biodiversity, defined as the 'perceptual recognition of the value of biodiversity in cities' (p. 1028). This would lead to a new awareness, recognition and understanding of biodiversity, which would form the foundations to build adaptive capacities in the city. However, as noted by Gobster et al. (2007) and several experimental studies in the past 10 years (e.g. Dallimer et al., 2012; Farris et al., 2024; Gonçalves et al., 2021), perceiving biodiversity and its value remains challenging.

1.2 | Care-based nature conservation citizen science

Combining the perspectives of the *transformation of experience* and the theory of care, it appears that a prerequisite of care for nature is a significant positive experience with it. Citizen science is a common entry point for many non-specialists to engage in science-focused activities, including astronomy, meteorology, genetics, neurosciences, and nature conservation, to cite a few. Focusing on citizen science for nature conservation, it has been argued that, other than collecting large datasets for the scientific community, these projects should also encourage participants to form a relationship with the environment they are investigating (Karrow & Fazio, 2010). To achieve this *care-based* citizen science, especially in school contexts, Lyons et al. (2017) proposed four guiding pedagogical principles: a positive relationship between experts and citizen scientists; dialogue to foster critical thinking; hands-on experiences; and recognition of citizen scientists as part of the scientific community.

These principles seem to apply beyond the school context, as volunteers are often driven by the desire to help and to be in direct contact with natural environments (Domroese & Johnson, 2017). For example, analysing the motivations to volunteer for two large-scale projects, Bloom and Crowder (2020) highlighted that citizen scientists were more driven by their own development (in the form of learning) than by submitting data to the project. In the US, citizen scientists taking part in the conservation of oysters highlighted the development of strong place identity and social bonding (Toomey et al., 2020). A randomised controlled trial in the UK (Pocock et al., 2023) assigned a total of 500 participants to do a short, repeated activity (10 min a day for 8 days; activities included pollinator counts, noticing three good things in nature or a combination of these). Comparing these groups with a control (who did not receive a task), those who engaged in the nature activities showed a 15% increase in pro-environmental behaviours, supporting the notion that engaging with citizen science could lead to improved care for nature.

One of the limitations of citizen science for nature conservation is that it may attract only those who are already passionate about

caring for nature or feel connected to it (Schuttler et al., 2018). To go beyond this, science has been combined with artistic performance to communicate environmental problems to wider audiences. This could take the form of pixel art to help visualise the unseen plant diversity of ephemeral ponds in Spain (Angeler, 2016). In Latvia, a series of events combined scientific demonstrations with thematic concerts, poetry and visual installations to encourage the public to engage with environmental issues (Opermanis et al., 2015). When surveyed, 80% of visitors responded that they had been attracted to the artistic performances, and over 43% declared an increased pro-environmental activity after attending. In another study, members of the public in Australia were invited to workshops to engage through a *head, heart and hand framework* and learn about native frogs, pollinators and vegetation used by the Kulin Nations and to produce different artistic outputs (Renowden et al., 2022). In the exhibition *In Memory of the Plants*, the public participated by writing stories on how they connected with plants (McGinn et al., 2025). Citizen science and art can communicate, bring awareness and connection with nature.

1.3 | Curated landscapes

Curatorial practices have been developed in museums and art or scientific collections, ranging from the management of the collection to the display of selected items with a specific narrative (Persohn, 2021). In urban areas, the curatorial practice of green spaces tends to highlight historical, cultural and/or ecological aspects of the space and its community through interventions and events that can be permanent and/or temporal. The intention(s) behind the programme can be varied, from reactivation of the space to the outreach and integration of specific demographics (Ivers, 2018). Some examples are the *Botanical or Historical tours* and *Star gazing nights* in the New York High Line (Friends of the High Line, 2026), the *Naturalists Saturdays* in Chapultepec Park in Mexico City (Bosque de Chapultepec, 2026) or the temporary installations in the lawn around the Serpentine Gallery in Kensington Gardens in London (Serpentine Galleries, 2026). In this project, the concept *curated landscape* is used as the process of selection, installation, presentation, and interpretation of meadows, in four parks, and the programme of events of citizen science and community art set up in the same parks to explore and learn about the plant species of the meadows and the insects (pollinators and other flower-visiting insects) with the intention to incentivise care for nature.

1.4 | Aim and research questions

In this paper, we want to explore if the use of both citizen science and art in public parks can generate positive experiences with nature and if these experiences can incentivise care. We report on the results of a 1-year study where workshops of citizen science and community art were delivered to generate positive and

repeated experiences with nature in urban green spaces. Within the framework proposed by Soga and Gaston (2020), these repeated experiences were categorised as *immediate* (i.e. physical proximity), *highly conscious* and *highly intentional*, combining art and citizen science to explore how curated landscapes could encourage care for local biodiversity, here meadows (defined below). Methodologically, the project drew on the first steps of Tronto's framework (1998, 2013), aiming to increase people's awareness of urban nature, encouraging a sense of responsibility and developing new competencies. Specifically, we focused on the following research questions (RQs):

RQ1. How can a curated landscape with meadows, citizen science, and community art generate *significant positive experiences* with nature?

RQ2. What are the *elements* in curated landscapes that generate direct positive experiences with nature?

RQ3. Does a curated landscape with meadows, citizen science, and community art *incentivise care* for nature? Is a curated landscape enough to incentivise care for nature?

2 | METHODOLOGY

2.1 | Curated landscapes and site selection

Meadows are semi-natural grasslands found worldwide, traditionally mowed for hay and/or used for a short period as pasture (Janišová et al., 2023; Rackham, 1995; Ratliff, 1985). Today, meadows are increasingly re-established in urban green spaces as an alternative to mown grass to diversify biodiversity provision (Klaus, 2013; Marshall et al., 2023). As research has shown that wildflower meadows

seem well accepted by the UK public (Hoyle et al., 2018; Southon et al., 2017), wildflower perennial meadows were chosen to represent the curated landscape, to engage with the local community and show care for the landscape.

Four public parks were selected in Sheffield (UK, 53°23'01"N 1°28'01"W) to install the wildflower meadows. These sites were selected to cover a range of green spaces in terms of size, communities' demographics and socioeconomic backgrounds. Spaces also varied in terms of distance from the city centre, vegetation character and management (Table S1 and Data Sources). In each site, two types of rolled pre-grown meadow mats (Figure 1), each having a different perennial wildflower mix (Table S2), were installed by the research partner The Green Estate in early May 2024. Local park managers and volunteer groups representing the wider communities were involved in deciding where the meadows would be planted, negotiating between the needs of the meadow (e.g. being in full sun) and the desire of park users (e.g. having a flowery spot next to the café). Being pre-grown, the meadows produced the first flowers in early June, and most plants went through a complete flowering cycle during the summer. In all parks, the meadows were retained and maintained after the end of the project.

2.2 | Participants and recruitment

Potential participants were initially approached via an existing network, the Sheffield Green Space Forum, which unifies many community groups involved in green space volunteering (e.g. Friends of Park groups). This was done in an attempt to rapidly establish connections with local communities, leaning on the volunteers' networks to extend the invitation to other park users. The workshops were advertised via email, Facebook groups, WhatsApp community groups and posters pinned up on community boards (e.g. in parks, libraries and supermarkets). The study and procedures were reviewed and approved by the School of Architecture and Landscape's Ethics Committee (Approval



FIGURE 1 View of the wildflower meadows in late July. Left: Native plus non-native species mix. Right: Only native species mix.

Ref. 059464). Members of the public who wanted to take part in the workshops but did not want to take part in the research were welcome as well. Written consent forms and research information were provided at the start of the workshops, ensuring that participants understood the content and could ask questions about it before signing.

2.3 | Workshops

A total of 16 workshops (four per park) were organised between early June and mid-September 2024. These were free-entry events, where participants could turn up without booking, though advanced sign-up was encouraged. Each workshop was a combination of pollinator visual surveys and a different themed artistic activity (4 in total), both focused on the meadow. The citizen science activity was the pollinator visual count, which lasted 10 min. The count was selected due to its accessibility and its direct interaction with the meadows. The artistic activities explored different elements of the meadow, such as scale, colour, texture, and could be easily run in the parks. The workshops lasted 60–120 min, depending on the attendance and weather conditions. The workshops were organised during both weekdays and weekends to engage as many diverse groups as possible. Participants were invited to join both activities, but could also choose to do only one.

2.3.1 | Summary of the activities

Flower-insect timed count

A facilitator introduced the participants to the Pollinator Monitoring Scheme Survey (UK Pollinator Monitoring Scheme, 2024), explaining how to use the record sheet and giving a brief talk (2–5 min) about a specific group of pollinators (e.g. bumblebees, hoverflies), providing

suggestions on how to identify the insects. Participants chose a 1 m² section of the meadow and counted all pollinators and flower-visiting insects on the flowers for 10 min. At the end, participants were invited to share with the group about the insects they had seen and reflect on how they felt during the activity. They were also encouraged to keep their recording sheet and to submit their records to the Pollinator Monitoring Scheme's website.

Cyanotype

Participants picked foliage and flowers from the meadows and arranged them into a composition, which was transferred to photosensitive paper. The paper was exposed to sunlight for between 5 and 20 min, depending on ambient light levels, before washing in water and drying (Figure 2). At the end, all participants reflected on the experience and were invited to give a title to their print.

Seed portrait

Magnifying glasses and hand microscopes were used to look at some seeds growing in the meadows: Bladder campion (*Silene vulgaris* (Moench) Garcke), Oxeye daisy (*Leucanthemum vulgare* Lam.), Avens (*Geum* sp.), Field scabious (*Knautia arvensis* (L.) Coult.), Yarrow (*Achillea millefolium* L.), Sage (*Salvia officinalis* L.), Self-heal (*Prunella vulgaris* L.). After 15–20 min of free observation, the participants were invited to follow a sketching warm-up exercise and then to draw one or two of their favourite seeds on a postcard.

Watercolours

Participants sat close to the meadows and observed the specific colours of the summer flowers and foliage. They were then asked to mix the watercolour paints and make a 'colour palette' or 'colour swatches' on paper, which aimed to match the natural colours observed.

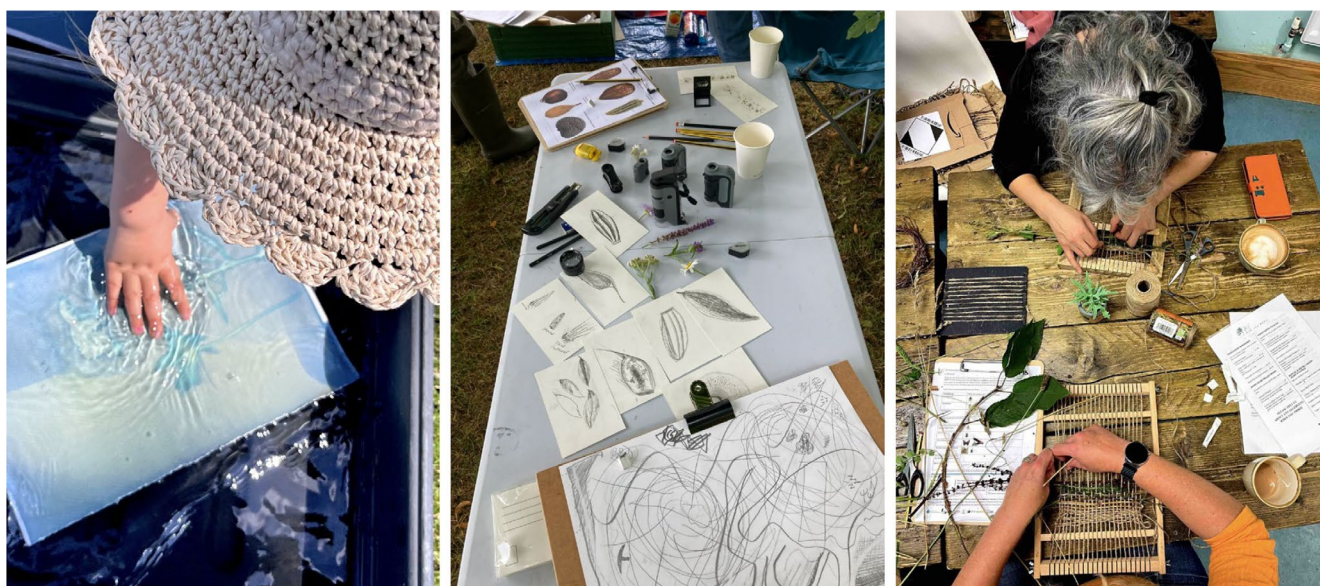


FIGURE 2 Workshop activities. Left: Cyanotyping. Middle: Sketching exercises and seed portraits. Right: Participants weaving with plants indoors due to heavy rain.

Weaving

Participants were provided with wooden and cardboard looms and invited to weave with thread and stems from the meadows and tree twigs from the park. The participants experimented with different plant materials, including dried flower heads and coloured threads.

2.3.2 | Data and analysis

Data were collected in various forms in response to the semi-structured flow of each workshop. The primary data collection method was observational, where a non-facilitating researcher took notes on the participants' remarks and interactions. These notes were discussed by the whole research team immediately after each workshop and complemented with further observations from the other facilitators. At the end of each workshop, participants were invited to write three statements reflecting on what they had learned or discovered during the activities.

This corpus of data was analysed following the Braun and Clarke (2006) method for thematic analysis. We adopted a deductive approach, as the themes of interest were predetermined by the research questions (Mayring, 2014). In particular, the focus was on evidencing the first three steps of Tronto's (1998, 2013) developing care framework: existing or emerging awareness of care for nature (*Caring about*), sense of responsibility (*Caring of*), and competencies in providing care (*Care giving*) to address the Research Questions.

3 | RESULTS

3.1 | Attendance

Approximately, 80 participants took part in the research, including volunteers, community members, and stakeholders. Only 73 provided consent, and their demographic information is reported in Table 1. These participants were members of the public who lived near the four main study sites: High Hazels Park, Norfolk Heritage Park, Manor Fields Park, and The Ponderosa Park. Among these, 13 participants were volunteers from the local Friends of Park group.

TABLE 1 Participant numbers by age group and gender.

Age group	N	Of whom volunteers	Gender ^a	
			Male	Female
Children	21	—	3	18
Teenagers/Young adults	12	—	4	8
Working adults	25	7	3	22
Retired adults	15	6	2	13
Total	73	13	12	61

^aNone of the participants selected the options 'Non-binary' or 'Prefer to self-describe'.

Participants were predominantly females ($N=61$), but there was a more balanced distribution across age groups: 25 participants were children (aged 16 or less), 12 teenagers/young adults (aged 17–25) and 40 adults, of whom 15 were retired. Participation was sometimes hindered by weather conditions or other concurring events (e.g. festivals in the parks and protest demonstrations).

3.2 | Thematic analysis

The thematic analysis highlighted the convergence of several patterns in the participants' words and observations around their experience with nature (RQ1). These were organised into six overarching themes, which will be detailed in the following sections. The first two themes collected the participants' existing knowledge of their park and neighbourhood and the new knowledge developed through the project. The other themes (RQ2) focused on the participants' perceived benefits, the new initiatives spurred by the project, and what barriers they faced in caring for nature (RQ3).

In the following paragraphs, when words from the participants are quoted, a coded identifier is provided. The code is formed by the participant number, a letter for the gender (either F or M), the age group and the letter V if they were part of the volunteer groups (Friends of Parks).

3.2.1 | Theme 1—Existing knowledge

Participants had different levels of knowledge of nature. Some were highly knowledgeable about their parks, sharing their enthusiasm with the rest of the group: 'It's a very nice park to explore and at one end there are fields with animals, and at the other end, a woodland edge' (37M-Retired-V). Some reflected on how they had previously looked at the park biodiversity by organising 'Bug Walks' (9F-Working-V) and botanical walks where 'We look in detail at the trees, grasses and animals' (72F-Working). This led to a sense of appreciation for what the park had to offer.

All parks had existing features appreciated by the participants, which sometimes were their reasons to go to the park: 'In the new swale in the park, I found loads of dragonflies' (9F-Working-V). Common features included ponds, freely accessible sports facilities, and play areas. Sometimes these features no longer existed, leaving the participants with a sense of nostalgia: 'This park used to be more lively. There was a pond and more activities' (48F-Retired). The new meadows were perceived as a welcome new feature—'We pass the meadow every day and we have seen it grow' (18F-Retired)—and some participants changed their habits because of the meadows: 'We come to the park every day, but we never walked around this area. You can always discover more spaces in the park' (12F-Working-V).

This knowledge extended beyond the borders of the park, and many participants commented on the nature found around their gardens and allotments, where they would usually find 'loads' of bees and caterpillars (38F-Working-V). Throughout the summer, this knowledge

helped the participants to perceive a trend in the pollinator population, with one feeling that 'There are not many moths and butterflies anymore. It has been low on bees and bumblebees this year. It's been 'quiet', not much sound of buzzing' (61F-Working).

As several participants were retired, they also tapped into their life experiences during the activities. For instance, they shared that parks had been important places in their lives: 'I always brought my children here as they were growing up. [...] I will keep bringing my grandchildren to this park too. Much better than leaving them in front of the TV or going into town' (48F-Retired). One participant had a deep, long-term relationship with his park grounds, visiting it daily for over 60 years: 'I used to come to the park with my dad, and brought my children too' (37M-Retired-V). He continued to visit the park despite relocating farther away and having to travel on the bus for 40 min.

3.2.2 | Theme 2—New knowledge

During and after the workshops, many participants shared novel observations about the nature they were experiencing. Often it was a pure moment of discovery—'I had never seen a ladybird larva before!' (26F-Retired-V)—or realising that they were doing something differently—'We spend loads of time working in the garden, but we usually don't spend any time looking at pollinators or plants in detail' (22F-Working-V). At the end of each observation exercise, the inconspicuous world of the invertebrates became clearer, and so did the participants' sense of scales in nature, with some noticing 'how much is going on' (2M-Retired-V) in their quadrats during those 10 minutes, while others connected with all the scales offered by the meadows—'Really good thing to try to appreciate the insects, it's not just about plants on display but all the things around [them]' (3F-Retired-V). With this new awareness came the realisation of how it is easier to appreciate the macroscopic elements of nature (e.g. the trees, the hills) while its microscopic components are as important.

Experiencing the meadows through art, the participants saw the aesthetic qualities of leaves, flowers and seeds in a new light. As the meadow developed, seasonal changes became evident, with some participants noticing that 'The colours [of the meadow] change every week' (61F-Working) and that, overall, the meadow looked more 'White [at the] start of the season and blue later on' (80F-Working). Different art techniques highlighted different characteristics. Cyanotype printmaking helped highlight 'The variety of shapes between grasses and trees and plants is amazing' (1F-Retired-V), while microscopes revealed a world of hidden details. One participant commented on the different aesthetics of the seeds, remarking how she never thought that the 'simple' seeds could look so 'beautiful' (50F-Retired). Watercolour painting revealed that 'Stems gave different colours as well' (65M-Young Adult), broadening the interest beyond the flowers.

Through the activities, participants developed new skills. Through citizen science, participants reported that '[...] actually it's interesting to distinguish between different kinds of bees' (29M-Young Adult) and finding other insects never seen before. Weaving

helped develop creative skills. One participant asked about the use of dandelions, brambles, and nettles for weaving. He showed interest and awe at the possibilities. Weaving with plant materials offered unexpected potential: 'I've done this [weaving] for a long time, but only with threads. [...] This is what we should do for weaving practice. Plants are easy to find, costless and we can help the environment by doing it like this' (71F-Working).

3.2.3 | Theme 3—The workshop effect

All participants self-reported a positive experience working with nature, and most of them shared their in-the-moment feelings with the rest of their group. Positive emotions were focused on the meadows, which seemed especially appreciated by children. Other participants mentioned their new love for all pollinators. As well, positive emotions were aimed towards the participants' inner self: 'The session was informative, creative, therapeutic, relaxing, great to be outside' (40F-Working-V). These feelings were spread across all the activities, although weaving seemed to also elicit a sense of fulfilment: 'I could do this every day. Morning: collect plants and prepare the looms. Afternoon: weave' (76F-Working).

The Pollinator observation, watercolours and weaving were perceived as focusing and mindful activities: 'Heightened observation skills over 10 minutes observed. Transects focused my mind' (3F-Retired-V). This feeling was shared across the age groups—'It was great to see such young children engaged' (9F-Working-V)—and one participant, a carer, expressed surprise and delight at seeing one of their tutees taking up painting with watercolours with enthusiasm: 'I never seen him painting!' (62F-Working). Weaving encouraged social interactions and conversation. The participants felt free to share their experiences: 'It's nice to do activities in the park and have actual conversations with people' (76F-Working).

3.2.4 | Theme 4—New initiatives

Participants expressed their desire to invite others to take part in the workshops: 'I want more people to join this activity for wildlife' (30F-Teenager). In some cases, they thought of specific groups who could enjoy the activities: 'People in the allotments must love counting pollinators' (9F-Working-V), 'Will be passing on the ideas to others personally and professionally' (77F-Working). Some participants used the workshop resources (e.g. using the Pollinator Monitoring Scheme Survey sheets) and ran other workshops themselves. One participant who had a homeschooling group said: 'I brought the kids here after the first workshop. They were surprised there was a meadow here! The children liked the flowers and we spent some time counting the bees as we did during the [first] workshop. I think the children loved the meadows' (12F-Working-V). Others expressed their desire to keep learning nature-related topics: 'I wish I could learn entomology and understand the relationship between landscape architecture, landscape planning and insects [pollinator

Biodiversity] on the larger scale' (19M-Work), while others wanted to further their art skills: 'Want to learn more about weaving' (38F-Work-V).

3.2.5 | Theme 5—Attracting caregivers

During workshops, it was observed that a high number of the participants were already voluntary care providers of green spaces or caregivers for people. One participant was '[...] a social worker and runs family interventions' (77F-Working). Another one, 'I work in the community centre with the wellbeing group and helping with the crafts workshops or in the garden' (73F-Working). She later explained she used to volunteer in '[...] Grow UK working with people and helping nature' (73F-Working). Some participants have green spaces they manage: 'I own a piece of woodland, I bought it and now I manage it, and the Woodland Trust came to visit us and give us ideas on what to do' (72F-Working).

It was no surprise that members of the Friends Groups, who were partners of the project, were carers for green spaces, but a high number mentioned other caring activities, for people or the environment. 'I used to be part of the Veterans Breakfast Club, and then around COVID, I started [with other members] the X Friends Group' (4M-Working-V). 'In all the groups I've been, I have always been chosen as the chairman' (37M-Retired-V). One participant works with a group in Nottingham to provide access to the Peak District with 'Socialising events to make connections and [for people who] are interested in cultural heritage' (40F-Working-V).

3.2.6 | Theme 6—Needs and barriers of care for nature

Participants from Friends Groups mentioned some of the barriers encountered when caring for nature in the park. One was lack of engagement: 'Having the hands and the time, we could do more' (37M-Retired-V). The lack of time to spend in parks was among the most commonly cited barriers: 'It would be useful for adults too, but if they are working, they cannot come' (48F-Retired). Lack of a social network is another barrier: 'Some people [adult men] have no contact with people, only random encounters with people without actual contacts' (76F-Working). Some found perception and local management to be a barrier. One participant said the city council keeps cutting wildflower meadows [outside the project] despite the efforts of their groups (a youth club) to let them grow (61F-Working). One participant had been in contact with the managers of the park, explaining that they needed to prune at a different time of year to maximise flowering. After no luck for several years, he was very happy that finally his words were heard (37M-Retired-V). Some identified areas for improvement, but felt that it was the role of the researchers to inform the community. 'You should tell the community around the park about this and teach them simple things like not to feed the birds with rice, because the excess of it attracts rats' (20F-Working).

4 | DISCUSSION

Our findings show that citizen science and community art were able to provide social and cultural contexts for positive experiences with nature (RQ1). Although the meadows were visually appealing to park users, it was through the interaction of art and citizen science that participants could transform the event into an experience of nature. Observing the meadows and pollinators was often the focus of the participants' appreciation. This is in line with Clayton et al. (2017) description of 'appreciative' experience of nature, where nature is appreciated without considering its value as a resource. According to the same classification, the workshops could also be classified as 'interactive', 'shared with others' and 'positive' (Clayton et al., 2017, p. 647).

The workshops created the conditions for an appreciative and active experience of urban nature. The arts activities attracted a range of people who would not have considered taking part solely in pollinator observation (Opermanis et al., 2015). Arts are an effective medium to focus attention on a natural phenomenon while allowing space for exploring and interpreting the phenomenon without the pressure of 'being correct'. This could be related to the 'Attunement' theme found by Renowden et al. (2022), where participants felt *attuned* to nature by a *subtle ecological awareness* of the natural world. Also, in this sense, the activities followed the principles proposed for care-based citizen science (Karrow & Fazio, 2010; Lyons et al., 2017). From this project, it is possible to extrapolate four of the elements that, in this case, contributed to the positive experiences with nature through curated landscapes (RQ2).

1. *The environment and the natural typology.* For the curated landscapes, the selected natural typology, non-native and native flower meadows, fit the requirements of being a shared cultural element of the landscape in Sheffield (Nassauer, 1995). During the workshops, the feeling of 'being away from the city' was mentioned by various participants, even in situations where the workshops were delivered not far from busy streets. The setup was familiar for most of the participants, being in their local park, with no threats from nature, and/or other humans, giving a sense of safety. This resonated with the feeling of 'being away', one of the conditions Kaplan and Kaplan (1989) included in their Attention Restoration Theory, where people feel away from their normal routine.
2. *Encouraging curiosity and wonder.* Through workshops, participants had the space, time, tools, methods and initial direction to observe and explore the interactions and characteristics of plants and pollinators. Curiosity—i.e. the drive to know more about the unknown (Kang et al., 2009)—was encouraged by the information provided by the researchers at the start of the workshop (e.g. the pollination feats of bumblebees), and some adult participants actively enquired how to learn more about the topic. At the same time, many participants shared their sense of wonder—which is the multifaceted drive to learn more about something strange/mysterious but worthy of attention (Schinkel, 2018)—elicited by certain arts activities (e.g. looking at seeds under magnification). Combined, wonder and curiosity contributed to making

the experience memorable and supported by positive emotions (Clayton et al., 2017; Soga & Gaston, 2020).

3. *Knowledge and skills.* In the analysis, the opportunity to gain and share knowledge and skills about nature and/or to explore and interpret nature was important. Learning to do cyanotypes helped participants explore the different forms of leaves, while drawing seeds opened the door to the intricacies of seed surfaces and dispersal adaptations. Learning to identify groups of pollinators elicited a positive reaction. Gaining knowledge and skills is both important for the development of care in general (Fisher & Tronto, 1990) and arguably of care of nature. We need knowledge of nature to prevent the *Shifting Baseline syndrome* (Soga & Gaston, 2018). The active sharing of knowledge between the participants and the possibility to gain new knowledge and skills allowed them, on the one hand, to actualise their knowledge of local pollinators, and on the other, to gain skills to identify more needs of care in the park.
4. *Community engagement and discussion forum.* Knowledge transfer during the pollinator count, from the more experienced and knowledgeable to the neophyte members of the community, induced conversations between participants from different backgrounds and ages. Art activities, like weaving and watercolours, created a space where participants shared personal experiences with nature, talked about their experiences in the park, and identified needs for care.

Care is a multistep process which can have different entry points but usually starts with becoming aware of what needs to be cared for (Tronto, 1998, 2013). In this study, curated landscapes appeared to be effective in incentivising this initial stage of care (i.e. caring about or the beginning of a *caring orientation*) by supporting the participants in becoming more aware of urban nature, through appreciation (Musacchio, 2013) and positive experience of nature (Clayton et al., 2017; Soga & Gaston, 2020). According to Soga and Gaston (2018), direct and positive experiences of nature represent one way to contrast the extinction of the experience and the shifting baseline syndrome. During the workshops, some participants recognised the *needs for care* but argued that someone else should take action. In some cases, the participants felt that educating others was not their role, as they felt they lacked authority. Previous research with Friends Groups (e.g. Mathers et al., 2015) also highlighted some resistance from community members in developing new caring skills, feeling that the responsibility of park maintenance should have fallen more on public services. Following Tronto, these examples could be seen as the difference between *caring about* urban nature (i.e. noticing something needs care) and *caring for* the urban nature, which implies assuming responsibility, therefore, being accountable for the consequences. This is a later stage in the caring process and requires the development of further caring skills (Moriggi et al., 2020; Tronto, 1998, 2013). This is not to say that green space management should be replaced with care from the public, but having more knowledgeable, skilled and motivated communities can help management at different levels by questioning and influencing practices and policy implementation.

It is not surprising that the majority of the participants were women, who historically have been the major unpaid caring force of families, communities and nature (Ervin et al., 2022; Fisher & Tronto, 1990; Salleh, 1995) and who brought children. Some participants in the group, females and males, were *carers*: people who cared for people (beyond their family members) and/or nature. This is particularly important because these participants are already assuming responsibilities of care within their community and are interested in learning new skills. The subgroup of carers of the park (Friends of the park) was already in established partnerships with the park managers and actively working either as fundraisers for specific developments and/or helping with management decision-making. For them, the curated landscapes workshops provided a platform to upscale their skills and knowledge, and as a space to identify future carers and expand their volunteer networks.

Our case study suggests that the integration of curated landscapes with citizen science and art can be used to incentivise the first stage of care when drawing on the four specific elements described above: a location where nature can be accessed in a safe way and where participants feel away from their daily routine; activities that encourage curiosity and wonder, provide new knowledge and skills, and encourage community engagement. Further elements to foster and enrich care can be discovered in other communities and in different natural contexts.

5 | LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The community involvement and data collection period spanned a short time (i.e. from April to September) due to the project duration and funding constraints. This limited our capacity to engage with other, wider park communities and users. Although the project called on existing associations (Friends of Parks), reaching out to the wider community required a sustained communication effort. Word of mouth and chat groups proved to be more effective ways to invite participants. This happened only at a later stage, when previous participants invited peers. Furthermore, although the participants represented most age groups, other demographic factors were underrepresented. Notably, only a few participants were male working adults, despite activities being held also during weekends. Therefore, it is advisable to design programmes with the intention to appeal to the local male population. Moreover, although a large number of participants took part in the activities, only a few attended more than one workshop. This limited the analysis to a single experience of nature, which may partially explain why only a few examples of advanced care for nature were documented.

To overcome all these limitations, future research should consider a longer-term, participatory approach. This would ideally allow more time for establishing a co-creating relationship between the researchers and the community, favouring communication with those groups who would not normally attend the activities, such as

working-age males. This project focused on a kind of wildlife that is widely accepted by the UK public (flowering plants, pollinators, and flower-visiting insects). Although in this case there was direct experience with plants and pollinators, projects with other wildlife that might be perceived as dangerous or unpleasant, for example, snakes or spiders (Zsido et al., 2022), would need a different design that considers an indirect method; for this, a scaffolding approach in successive workshops could increase the sense of safety and reduce the risk of rejection.

6 | CONCLUSION

In summary, this research project aimed to examine curated landscapes combining citizen science and arts to draw attention to urban nature and how to encourage care for it. The research activities proved to be effective as a supportive tool to provide novel experiences of nature to the community, especially through mixing art and science in situ. Through direct and positive experiences of nature, the participants started to recognise the 'needs of care' of urban nature, developing observational and relational skills. However, more is needed to incentivise a complete development of the caring process, so that communities can develop a shared language, organisation and attitude of active care. We propose that the incorporation of future envisioning methods into curated landscapes could lead to future research on how to move from *identifying needs* of care to *caring for* (Christensen et al., 2024; Chubb, 2025). Extended care for nature is needed to stop the loss of biodiversity. The project showed the importance of supporting active carers of the community who already are agents of change; with more skills, tools and knowledge, they can re-use, adapt and implement within their communities. Curated landscapes with citizen science and art activities in natural areas can provide a platform to engage different groups within communities by allowing different generations, genders, and ethnicities to interact together, learn and share experiences with nature.

AUTHOR CONTRIBUTIONS

Elisa Olivares Esquivel conceived the ideas, and Simone Farris and Catherine Higham designed the methodology; all the authors collected the data; Elisa Olivares Esquivel and Simone Farris analysed the data; Simone Farris and Elisa Olivares Esquivel led the writing of the manuscript. All authors contributed critically to the drafts and gave final approval for publication.

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CONFLICT OF INTEREST STATEMENT

The authors declare no competing interests.

DATA AVAILABILITY STATEMENT

Data are available through the Zenodo Data Repository and can be found at <https://doi.org/10.5281/zenodo.21360222>.

ORCID

Elisa Olivares Esquivel  <https://orcid.org/0000-0002-3186-9468>

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

Table S1. Characteristics of the sites.

Figure S1. An overview map of Sheffield showing the location of the meadows (green dots) and the green space context. Scale 1:50,000 (Ordnance Survey (GB), 2024; OpenStreetMap Contributors, no date).

Figure S2. Household deprivation map for the Ponderosa and the surrounding area (Office for National Statistics (ONS), 2022b).

Figure S3. Household deprivation map for Norfolk Heritage Park and the surrounding area (Office for National Statistics (ONS), 2022b).

Figure S4. Household deprivation map for Manor Fields Park and the surrounding area (Office for National Statistics (ONS), 2022b).

Figure S5. Household deprivation map for Manor Fields Park and the surrounding area (Office for National Statistics (ONS), 2022b).

Table S2. Meadow mixes species lists and origin (POWO, 2026).

Table S3. Workshop content per each month.

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