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Identifying holistic design opportunities for nature connection in St. Andrews, Fife

S O F I E B R Ø G G E R

S U P E R V I S O R : D R . R E H E M A W H I T E

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Introduction

*“Many eyes go through the meadow, but few see the flowers in it.”
—Ralph Waldo Emerson*

As I walk through the cobbled streets of St. Andrews, I notice how nature attempts to reclaim space – butterfly bushes growing on the old sandstone walls and dandelions popping up through the asphalt. While these little testimonies of resistance bring me joy, I miss the daily interactions with the wild, green spaces I had on my doorstep growing up in the countryside of Denmark. St. Andrews, a small historic town on the East Coast of Scotland, is far from the vast areas of the Cairngorms and is located in Fife - a region characterised by intensive farmland and lime-green golf courses. Within this artificial landscape are the paved roads, sandstone buildings and the occasional neat lawn, making it is easy to go for days without spending time in “nature”. There are pockets of wild nature left – along the river Kinnesburn and on the weathered coastline of the North Sea – but the public green spaces in St. Andrews are often manicured parks or hard to find, and they are not enough to remain connected to the cycles of nature nor to unwind from a busy life.

The term “extinction of experience” refers to the ongoing alienation from nature – defined as natural environments and their wildlife (Soga & Gaston, 2016) As a testament to the widespread disconnect from nature in modern Western societies, “nature-deficit disorder” is becoming increasingly prevalent as most children in the UK spend less time outdoors than prison inmates (Carrington, 2016). With more than 80% of the UK’s population living in urban areas, it is important to create spaces for nature within the built environment and, in doing so, employ efficient strategies to enhance nature connection (World Bank, 2022).

Given the opportunity to do research, I decided to explore how holistic design can increase nature connection in urban areas by engaging with a local biodiversity project, Meadows in the Making. In this essay, I argue that nature connection as a subjective concept is essential to human health and wellbeing and that it, when successful, is an important part of overcoming environmental challenges such as the climate crisis and biodiversity collapse. To support nature connection in urban areas, I argue a holistic co-design approach is needed to provide accessibility for all local users, maximise space functionality and ensure co-benefits for human health and the environment.

Methodological Approach

I have conducted semi-structured interviews with key informants such as project partners of Meadows in the Making and professionals specialised in the design of urban green spaces. Additionally, I looked to the literature to understand the conceptual understandings and benefits of nature connection and I compiled case studies to identify best practices for holistic design strategies in urban environments. To enable co-design of local spaces in St. Andrews, I designed an online questionnaire to invite the community to share their ideas and visions for their shared green spaces. Using the ‘Evoneer’s Journey’ as a framework, I did an analysis of Meadows in the Making to understand the status quo of the project and identify potential next steps.

Literature Review

“People talk about connecting to nature, but we are nature, we've just forgotten, that's all.”

– Mary Reynolds

What is nature connection?

Nature connection is a contested concept that can be understood, defined and evaluated in different ways and which exists within a range of disciplines including sustainable development, philosophy, ecopsychology and pedagogy (Ives et al., 2017). Within research, nature connection is therefore understood as cognitive, emotional, philosophical, material and experiential (ibid). Some scholars also distinguish nature connection from ‘nature contact’ – the sheer experience of being exposed to natural elements rather than the subjective feeling of being *connected* to the natural world (ibid; Capaldi et al., 2015, 2). However, for many it is strange to envision a “connection to” nature, as we are simply part of it. In many indigenous communities, the human-nature relationship is grounded in a ‘kincentric ecology’ in which humans and all natural entities are experienced as kin (Salmón, 2000; Stoeckl et al., 2021).

Similarly, rooted in pagan religions and Irish traditions, garden designer Mary Reynolds has a spiritual approach to nature connection. In her book *The Garden Awakening* she explains how “The Earth is made up of diverse pieces of land with distinctive physical and emotional characteristics the same way that individual people have unique personalities” (2016, 22). In my interview with her she expressed how, to her, connecting with nature is therefore both a process of uncovering the true character of the land and carefully nurturing a relationship with it. Nature connection is as such subjective and dynamic, depending on the individual’s understanding of their own evolving relationship with the natural world (Capaldi et al., 2015).

What are the benefits of nature connection?

Nature connection is essential for both mental and physical health. Capaldi et al. outline three major benefits of nature connection to human wellbeing; attention restoration, stress reduction and ‘biophilia’ (2015, 2). The Biophilia hypothesis describes the innate affinity humans have with the natural world as a result of co-evolving with it (Wilson, 1984; Kellert & Wilson, 1993). This subjective sense of belonging, feeling of wellbeing and being in awe of nature is called ‘yūgen’ in Japanese and is associated with the practice of forest-bathing. Forest-bathing encourages people to use time in forests as a form of medicine which is backed by studies showing that natural oils released by trees have positive long-term effects on the immune system and increases the production of cancer-fighting cells (Li, 2018). Short-term effects include boosts in mood and lower blood pressure which are effective for stress, anxiety and depression (ibid; Capaldi et al., 2015, 3). We do not yet understand all the ways in which nature connection enhances our health and wellbeing, but it is clear that nature connection and its benefits are not only a cost-effective solution to many of the health problems affecting modern society but it is also an innate human need.

Nature connection can help solve the biodiversity and climate crises by fostering pro-environmental values, attitudes and behaviours. People who are more connected to nature are more likely to adopt pro-environmental behaviours such as willingness to sacrifice, donating larger sums for nature protection, practicing environmentally conscious consumption and voting for political parties who are committed to sustainability action (Davis et al., 2011; Soga & Gaston, 2016, 98). Considering that the majority of the world's population toward 2050 will be living in cities, the dialogue between nature connection and urban green infrastructure is therefore increasingly important in addressing global as well as local environmental challenges (Parker & Simpson, 2020).¹ However, to ensure nature connection actually leads to pro-environmental behaviour, it is crucial to examine carefully how different people connect with nature.

How do people connect with nature?

Due to the subjectivity of nature connection, different types of people have different 'triggers' for connection. Studies have found contact, emotion, meaning, compassion, and beauty are effective pathways for improving nature connectedness (Lumber et al., 2017). This is important when designing green spaces in urban settings where space is constrained and is expected to fulfil a variety of functions. For some, exercise in nature is the preferred way of connecting with nature while for others it is gardening, birdwatching, meditating, foraging or doing arts (ibid; Capaldi et al., 2015; Raatikainen et al., 2020). Therefore, avoiding a mismatch between design and use by making urban natural spaces accessible and attractive to all is essential to maximise the potential benefits of the spaces for everyone (Bell et al., 2018; Kindermann et al., 2021). There is research suggesting that perceived site biodiversity of urban meadows correlate with site satisfaction and feeling connected to nature (Southon et al., 2018). More research is however needed to identify specific actions and practices that lead to nature connectedness in order to use resources for biodiversity conservation efficiently and ensure co-benefits for the environment and health (Lumber et al., 2017; Bell et al., 2018; Beery & Wolf-Watz, 2014).

Meadows in the Making on the Evoneer's Journey

The "Evoneer's Journey" is a framework used for project design and implementation and is especially useful where projects challenge the status quo.² The nine "stepping stones" describe the evolutionary circle that integrates proposed new solutions within society (SIRClE, 2022).³ Below I use the framework in the context of Meadows in the Making to A) describe how the project challenges the status quo of land management and public green spaces in St. Andrews and B) to understand the project stages and identify potential next steps.

¹ Urban Green Infrastructure (UGI) consists of green areas in the city such as parks, woodlands, green roofs, meadows, public and private gardens.

² I have chosen a version of the framework (developed by Ecovillage Transition in Action) with language that has been adapted from the original Evoneer's Journey to align more with project management terms.

³ See Figure 1.



*Figure 1: The 9 Stepping Stones of the Evoneer's Journey
(Global Ecovillage Network, 2022)*

1: The Spark of Inspiration

In early 2021, inspired by a talk from a butterfly specialist, the idea to use University-managed and public land in St. Andrews to create habitat for pollinators was born. The goal was to create 8 hectares of species-rich grassland and woodlands by implementing a sustainable land-management regime as an alternative to intensive, fossil-based grass cutting. The project also aimed to increase community engagement and offer volunteering opportunities to foster nature connection and increase support for maintaining the new habitats (Transition St. Andrews, 2022).

2: Mapping Potential

Taking advantage of the COVID-19 pandemic, the team learned from experts online. This consolidated the project and funding was secured through NatureScot's Biodiversity Challenge Fund. The funding covered the cost of specialised machinery and enabled two positions based at the University; an Ecological Project Manager and a Practical Conservation Worker, as well as a part-time Outreach Officer at the Botanic Gardens.

3: Strengthening Inclusivity

The project partners of Meadows in the Making include NGOs, local authorities and community groups. They are University of St. Andrews, Transition University of St. Andrews, Fife Council, St. Andrews Botanic Garden, Fife Coast and Countryside Trust and Crail Community Partnership. Together they own the meadow, woodland and hedgerow sites which are spread out across St. Andrews, Guardbridge and Crail on the East Neuk of Fife.

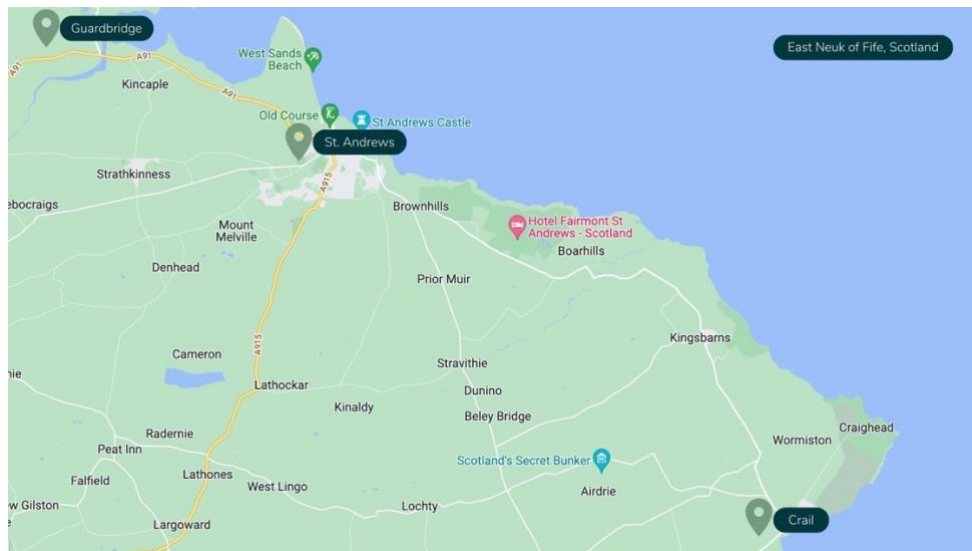


Figure 2: East Neuk of Fife with Guardbridge, St. Andrews and Crail marked.
(Google Maps)

4: Piloting Implementation

During the COVID-19 pandemic, areas of land owned by Fife Council were left uncut in an attempt to rewild green areas. This however had negative feedback as there were public complaints that the areas looked unkempt as well as concerns it was a cost-saving exercise rather than an initiative to promote biodiversity (Smith, 2020).

5: Tackling Challenges

From the learnings of the Fife Council pilot, a greater focus on communication using signs at the meadow sites has been incorporated, but the project is yet to overcome some central challenges, including:

1. **Resources** – the Phase 3 application for funding by NatureScot was rejected in the summer of 2022 and current staff positions (The Ecological Project Manager, Practical Conservation Worker and Outreach Officer) are due to end in Autumn 2022. The lack of permanent funding and a decision-making body within the University dedicated to biodiversity is therefore a fundamental barrier to the project going forward.
2. **Training and Engagement** – only one (temporary) member of the grounds team has received biodiversity training and is equipped to manage the meadow habitats. All the project partners have committed to manage the project sites for biodiversity for a minimum of 10 years, and an investment into the training and engagement of the grounds team is necessary.
3. **Communication and Branding** – nearly half of survey respondents in the online questionnaire I conducted were not aware of the project. There was a significant support for more communication about the project, events and biodiversity both around town and online.

6: Recognising System Change

Based on my interviews with project partners, the project is currently on the 5th and 6th steps of the Evoneer’s Journey. Despite the challenges the project is currently facing, Meadows in the Making has been a great success with impressive community participation. Since the

summer of 2021, a total of 544 people took part in 58 practical sessions to create and look after three new woodlands of 0.86ha, over 2.6km of hedgerow, and 5ha of meadows dotted around 17 green spaces. The challenge now is to create a sustainable structure for the project to continue into the future and integrate it within the partners' own strategies, action plans and decision-making structures. For Stephen Paul, the biodiversity training provided through the project inspired him to create his own wildflower meadow in his garden and enabled him to begin appreciating the nature he now sees around him. He describes his learning journey being involved with the project:

“I was born in the 60s and I watched my father cut his lawn religiously. If someone said to me a year ago, this is what you would do, I’d have said, well, that’s just not for me. But after going on the training courses on butterfly conservation, I was sitting in my garden and realised I had seven or eight species of butterfly that I never knew. But because I got the education, I then started to notice and to photograph them, and then you get excited! I don’t know if you saw me get so excited about the blue butterfly the other day? I was like 12 again! From a personal point of view, I’m getting a lot out of the job, and from a professional point of view I’m learning all the time.”

- Stephen Paul,
Practical Conservation Worker at University of St. Andrews



Figures 3-6: Photos from a day of hay raking and weeding at one of the meadow sites in St. Andrews. (Hannah Bowey, Sofie Brøgger)

7: Celebrating Success

Step 7 could be an opportunity to bring the project partners and stakeholders together to celebrate the progress achieved so far. In my interviews, I learned about the idea for an event called Music in the Meadows – this would be a great opportunity to communicate the successful stories (step 8) and raise awareness about the project.

8: Disseminating Successful Stories

Step 8 gives the opportunity to share the lessons learned from the project journey. Hopefully, my research will support this, but establishing more presence online would be a great place to start. It is also planned to give a walking tour of the meadow sites for Fife Climate Action Network.

9: Reflective Learning

Step 9 of the Evoneer's Journey offers a chance for the project partners to reflect on how the change in land management regime can become an integrated part of the daily workflows of each organisation and simultaneously support the goals of each partner. Fife Council has a goal of managing 10% of their grasslands sustainably while the University of St. Andrews aims to manage 60% of their land for biodiversity by 2035 (Smith, 2020; University of St. Andrews, 2022).

Holistic Design Opportunities for Urban Nature Connection

Through my research, I identified case studies to identify how we can support nature connection in urban environments.⁴ What came out of this were potential focus areas and sources of inspiration for Meadows in the Making to adopt a holistic design approach. Deliberate design is essential to maximise the space functionality and to repair and restore human-nature connection (Kellert, 2012). The below actions would benefit from strategic partnerships with local actors such as museums and existing sustainability initiatives in St. Andrews.

Create a Continuous Productive Urban Landscape

Scattered urban green spaces can be connected with clear routes for either walking or biking. The framework of Continuous Productive Urban Landscapes (CPULs) refers to a network of green infrastructure that is environmentally and economically productive through provisioning, regulating, cultural and supporting ecosystem services (Viljoen, 2005; Millennium Assessment, 2003).⁵ Meadows in the Making consists of fragmented spaces which could be connected by walking and bike routes using clear signage, accessible and interactive maps and doing guided tours. Survey responses in St. Andrews indicated that most respondents preferred walking and cycling to spend time in nature so investing in

⁴ Due to the scope of the essay, I am unable to include all the case study learnings. Included here are therefore only the highlights.

⁵ Ecosystem services is a term that covers all the natural services humans benefit from. These are for example food production, pollution absorption, water filtration and absorption, cooling and shading from trees or the biodiversity that ensures resilience of ecosystems.

infrastructure to support this would be ideal. Nearly 70% indicated that a signposted walking route connecting the spaces would make the green spaces more accessible. Another option is also to include a greater focus on urban food production, edible landscapes and foraging, and in doing so partnering with existing projects such as the Edible Campus initiative to create one continuous productive urban landscape in St. Andrews with both existing and proposed green spaces (Crowley, 2005).

Integrate art, culture, history and education

“All these pieces of land, they've different characters the same way people have, and those characters are expressed in language, music and art. The character of a place is expressed through culture.”

- Mary Reynolds

Art and beauty are effective facilitators of nature connection (Raatikainen et al., 2020; Lumber et al., 2017). Survey results from St. Andrews showed that nearly two thirds of respondents want to spend time in nature because it is beautiful and also to relax. Therefore, strategically placing benches for people to enjoy nature's beauty as well as being creative with for example accessible audio tours to educate on biodiversity literacy and connecting the sites with art and structures such as wood sculptures or willow-weaving would enable more nature connection for a wider audience as well as visually connect the green spaces. Including local heritage (e.g. the St. Andrews Cathedral, old University buildings etc.) to tell the stories of the land is a further opportunity to increase the connection to local place, which is important especially in St. Andrews where many users are visitors or temporary residents (Beery & Wolf-Watz, 2014; Bell et al., 2018). This could be done in partnerships with local museums and artists, through signage and QR codes to digital content.

Conclusion

I started this research to explore how holistic design can increase nature connection in urban areas such as St. Andrews, to investigate the benefits of nature connection for human health and wellbeing and to understand the role of nature connection in overcoming environmental challenges such as the biodiversity and climate crises. Focusing on Meadows in the Making, I identified holistic design opportunities that would allow more people to connect with nature in St. Andrews. Through the literature review, it became clear that nature connection is a subjective concept and that several avenues for connection must be designed into public green spaces. I found that a holistic design approach allows for this and that connecting sites with pathways and consistent signage as well as incorporating cultural elements in the designs would be especially beneficial to ensure accessibility for all local users, maximise space functionality and create co-benefits for both human health and the environment. While I have not been able to include my survey results and all of my case study findings, these have informed the type of solutions I have explored. Going forward, the project could benefit from doing focus group interviews and transect walks with local users in order to co-design the best solutions for the local green spaces in St. Andrews.

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