



Nature Prescriptions

Supporting the health
of people and nature

**A report on the outcomes of an urban pilot
of Nature Prescriptions in Edinburgh**

By Elaine Bradley, Project Manager, Nature Prescriptions RSPB Scotland

Welcome

It is with great pleasure that RSPB Scotland presents the results of an urban study of Nature Prescriptions in Edinburgh. For the first time, we can offer evidence of the value of Nature Prescriptions to both patients and healthcare professionals, and provide guidance on how this approach can be effectively delivered in a primary care setting.

We have never been more aware of how important nature is to our health and our wellbeing, with many of us turning to nature for support as we deal with the ongoing stresses of the COVID-19 pandemic. Amidst reports of a growing health crisis and increasing pressures on our health and care systems, it has never been more important to enable people to experience the direct health benefits of nature. However, nature is also in crisis and access to nature and its benefits is not equal for all communities. Now is the time to change this.

Nature Prescriptions provides health care professionals with the resources needed to encourage patients to connect with nature as part of their treatment plan. The resources offer ways of engaging with nature that can support mental and/or physical health, as well as potentially cultivating personal and lasting connections with nature that inspire a desire to protect it.

RSPB Scotland is promoting this initiative because we recognise that for nature to thrive it requires people to access it, enjoy it, value it, and in consequence, lend their support to saving it. The perseverance of GPs and other health care professionals in delivering a Nature Prescriptions pilot during a time of unprecedented demands, and the positive responses of those who received them, demonstrates the enormous value of Nature Prescriptions in supporting health and encouraging positive relationships with nature.

I hope we will be able to learn from this report and take it forward into greater expansion and uptake. Our long-term vision is that nature becomes part of the toolkit of every health professional in Scotland. This will not only support individual wellbeing, but can also strengthen the reciprocal relationship between people and nature and in doing so, help with nature's recovery, protect our wildlife and natural environments and create happier and healthier communities for all.

Anne McCall
Director, RSPB Scotland



Acknowledgements

The success of this pilot, under particularly challenging circumstances, is a measure of the determination and dedication of all involved. Edinburgh and Lothians Health Foundation has been a supportive partner and, in particular, we would like to thank Ian Mackenzie, NHS Lothians Green Health Programme Manager, for his valuable role throughout the design and delivery of the project.

We are extremely grateful to the five GP Practices in Edinburgh which took part in this study: we could, quite literally, not have done it without them. As such, we welcome this opportunity to thank all the staff at East Craigs Medical Centre, Leith Mount Surgery, St Triduana Medical Practice, Mill Lane Surgery and Inchpark Surgery for their active engagement with this pilot and for their ongoing support and care.

We are especially grateful to Dr Madeleine Housden, Dr Sara Hornibrook, Dr Louise Bailey, Dr Rachel Harrison and Dr Katarina Forsyth for helping us to bring Nature Prescriptions into their respective practices, and for the enthusiasm and energy that they brought to the concept of Nature Prescriptions in general, and to the RSPB Scotland pilot in particular.

Finally, enormous thanks to the Nature Prescriptions Project Team: particularly Joeline Hughes for her invaluable support during the design and analysis of the pilot, Kirsty Nutt for her attention to detail and her remarkable calmness in the face of unanticipated and changing demands, and to Helen Moncrieff – the beating heart of Nature Prescriptions – for her inspiration, enthusiasm and compassion for people and nature.



Snowdrop by Mike Beales (Flickr)

Executive Summary

Background

A growing body of evidence demonstrates direct links between exposure to nature and a range of health benefits, including reductions in anxiety, fatigue and depression, lower rates of inflammatory-based diseases, type 2 diabetes and obesity, improved concentration, enhanced immune function, and reduced mortality. In recognition of this, health care providers, policy makers and governments have become increasingly interested in promoting the benefits of spending time in nature for health. However, this has yet to be integrated formally into our healthcare system.

The Nature Prescriptions Project was designed to support GPs and other medical practitioners in the formal prescription of nature, drawing on their medical authority and societal respect to both encourage and permit patients to connect with nature as a means of improving their health and wellbeing. Nature Prescriptions are not intended as a replacement for standard treatments: instead, they work in ways that are complimentary to traditional prescriptions and person-centred health care.

Nature Prescription Materials

The prescription itself takes the form of a leaflet and seasonal calendar of nature activities. The materials combine RSPB Scotland's knowledge and understanding of local nature with the latest research on nature connection and how it can enhance health and wellbeing. The materials offer suggestions, guidance, and encouragement; all of which give structure to the prescription and loosely formalise the activities in ways that make them special, enjoyable and therapeutic. Nature Prescriptions is distinguished by its formal prescription from a medical practitioner (rather than "self-prescription") and by its focus on developing personal, ideally reciprocal, connections and relationship with the natural world. Nature Prescriptions moves beyond simply being active outdoors and encourages emotional and meaningful engagements with nature that not only support health, but also have the potential to engender a personal investment in the protection of wildlife and environments.

Pilot Research

The Edinburgh Pilot, which involved five GP practices, built on the success of the Shetland Nature Prescriptions project and aimed to investigate whether Nature Prescriptions could be delivered in an urban environment. Both quantitative and qualitative methods were used to evaluate the effectiveness of Nature Prescriptions. The research process involved: semi-structured interviews with prescribers; pre- and post-pilot prescriber questionnaires; formal recording of prescription data; and anonymous patient surveys. Nature Prescription data was recorded across all practices between September 2020 and June 2021.

The pilot was conducted during the evolving stages of the COVID-19 pandemic. Despite reports of a growing appreciation of local nature as a support for health during this time, the pandemic also highlighted inequalities in access to, and engagement with, nature and placed increasing pressure on GP practices as they dealt with changing guidelines and unprecedented demands. The move to a triage system of care and telephone consultations, along with reductions in staff due to illness or self-isolation brought unexpected challenges, all of which influenced the delivery of Nature Prescriptions.



Grey heron by Ben Andrew (rspb-images.com)

Results

Despite these constraints, 50 healthcare professionals prescribed nature to their patients during the course of the trial and over 335 Nature Prescriptions were formally recorded. Post-pilot data and interviews revealed that not all prescriptions given to patients were documented, mainly due to time pressures during consultations, and this means that the number of prescriptions recorded is an underestimate of the number actually given.

Further barriers to prescribing nature included: difficulties in engaging patients and in gaging responses during telephone consultations; temporary tenure in the practice; misunderstanding about process and/or resources; and lack of patient feedback. The factors that supported prescribing included: the content, quality and availability of materials; the simplicity of the prescribing process; positive responses from patients; prescriber enthusiasm; and ongoing support from colleagues.

Key Findings

- The majority of prescribers involved in the trial were GPs (70%) and GPs gave out 77% of the recorded Nature Prescriptions. Other prescribers included Practice Nurses, Health Care Assistants, one Community Psychiatric Nurse and one Link Worker.
- Nature was prescribed for 32 different health conditions across all age groups. Prescriptions were predominantly given to support mental health conditions (69%), with anxiety and depression being the two most cited reasons for giving a Nature Prescription.
- Nearly three quarters (74%) of the patients who completed a post-prescription survey reported that the Nature Prescription had been of benefit to them, with 70% stating that they continued to connect with nature daily, or multiple times a week, and 87% said it was likely or very likely that they would continue using their Nature Prescription.
- Over half of patients (56%) noted an ongoing increase in their awareness of nature, as a result of the prescription. Prescribers also reported an increased awareness of nature post-pilot, with many noticing associated positive health benefits for themselves and family members.
- The vast majority (87%) of patients felt that GPs should be able to prescribe nature for health. Both prescribers and patients reported that the role and authority of the prescriber significantly influenced the level of patient engagement with Nature Prescriptions.

- The willingness of prescribers to adopt Nature Prescriptions was influenced by a predisposition towards nature engagement, knowledge and/or experience of the potential benefits for health, endorsement by peers, as well as societal awareness and acceptance of nature as a support for wellbeing.
- Although a possible idiosyncrasy of this study cohort, there is some evidence to suggest that gender may be an important influence on the level of prescriber and patient engagement with Nature Prescriptions. The majority of prescribers (70%) identified as female and 93% of prescriptions were given by women. Similarly, prescribers seem to have been more inclined to offer a Nature Prescription to female patients (73%) than to male patients (25%).
- Pre-pilot, the majority of prescribers (59%) were not prescribing any nature-based activities for patient health. By the end of the pilot, 89% were actively prescribing nature with 91% stating that they are likely to use Nature Prescriptions over the coming year.

Conclusions

Nature Prescriptions is an effective, low-cost health intervention that has no negative side-effects, is able to support a range of physical and mental health conditions and is entirely complimentary to traditional medicative treatments as well as social prescribing approaches. Furthermore, Nature Prescriptions offers ways to cultivate personal engagements with nature that not only have a positive impact on patient and prescriber health, but also increase awareness of the value of nature, encouraging the behaviours needed to enable people and nature to thrive together.

The pervasive health challenges associated with the COVID-19 pandemic mean that there's never been a better time to connect people with nature to support wellbeing. Our vision is to build on the success of the Edinburgh Pilot and to expand Nature Prescriptions into GP Practices and communities across Scotland, and in doing so, enhance reciprocal relationships with local nature, and bring the associated health benefits to those who need them most.

Recommendations

Expansion

As a first step, the Edinburgh Pilot should be rolled out to other GP practices across the city to allow for continued assessment and evaluation of its efficacy, with a view to extending into other locations – both urban and rural. Further expansion should be undertaken in partnership with relevant health bodies and complement other green health initiatives.

Support

A central resource for Nature Prescriptions should be created so that all GPs and associated practice professionals have access to the tools, training and support needed to prescribe nature. A single online ‘hub’ of Nature Prescription resources would further enhance the prescribing process and potentially increase engagement.

CoDesign

Health care professionals, patients and members of the wider community should be included in the future design of materials, and the nature activities offered, to ensure that Nature Prescriptions effectively engages participants from all backgrounds and populations. Geographically specific nature activities will be integral to the customised Nature Prescription approach for each GP practice, taking into account seasonality, access to greenspace and with a focus on nearby nature.

Inclusivity

A deeper exploration of any gender bias in both prescriber and patient engagement with Nature Prescriptions, as well as in the prescribing process itself, should be undertaken. Understanding any differences in engagement across groups with specific characteristics will help to ensure that the materials, and prescribing process, are inclusive before and during expansion.

Benefits for Health Professionals

There is a strong relationship between prescribers’ perceived nature relatedness and their engagement with Nature Prescriptions. Similarly, the act of prescribing nature has been shown to have a positive influence on the prescriber’s own wellbeing. It would be advantageous to explore these relationships further by monitoring nature relatedness over a longer time period, as well as exploring any sustained effects on healthcare staff.

Monitoring & Evaluation

Continued evaluation of the experiences of patients who followed a Nature Prescription would provide valuable insights into the impact that this form of intervention has on participant’s overall health and wellbeing, as well as its capacity to transform behaviour towards nature in the long-term.

“Nature and green space can be seen as a great outpatient department whose therapeutic value is yet to be realised.”

Dr William Bird, GP



Contents

Welcome

Executive Summary

1 What is a Nature Prescription?	10
2 Nature Prescriptions Background	14
2.1 Origins in Shetland	14
2.2 The Edinburgh Pilot of Nature Prescriptions	15
3 Nature Prescription Materials	18
4 Edinburgh Pilot Research	23
4.1 Research Aims and Objectives	23
4.2 Pilot Participants	24
4.3 Research Design and Process	24
5 Edinburgh Pilot Results	26
5.1 COVID-19 Implications	26
5.2 Prescription Recording	27
5.3 The Prescribers	28
5.4 Pre-pilot: Attitudes and Experiences of Prescribing Nature	29
5.5 Prescription Data	33
5.6 Patient Experience	40
5.7 Prescription Process – Barriers and Enablers	48
5.8 Post-pilot: Prescriber Experiences and Future Intentions	53
6 Conclusions and Recommendations	56
7 References	58

1 What Is A Nature Prescription?

The past decade has witnessed increasing awareness and recognition of the positive relationship between healthy natural environments and human wellbeing. A growing body of evidence demonstrates direct links between exposure to nature and a range of health benefits, including reductions in anxiety, fatigue and depression, lower rates of inflammatory-based diseases, type 2 diabetes and obesity, improved concentration, enhanced immune function and reduced mortality ^(1, 2). In addition, research has demonstrated a positive correlation between nature connection and engagement, and levels of life satisfaction, vitality and happiness ^(3, 4).

In recognition of this growing evidence that connecting with nature makes us healthier and happier, health care providers, policy makers and governments have become increasingly interested in promoting the benefits of spending time in nature for health. However, this is yet to be formally integrated into our healthcare system. This is where Nature Prescriptions comes in.

Gorse by Simon Watterson (rspb-images.com)

The Nature Prescriptions Project was designed to support GPs and other medical practitioners in the formal prescription of connecting with nature for health. It draws on their medical knowledge and skills to determine whether a nature prescription is suitable for any given patient, and to then tailor the prescription to the individual's abilities and needs. Nature Prescriptions also draws on their medical authority and societal respect to both encourage and *permit* patients to spend time in nature as a means of improving health and wellbeing.

"Prescribing nature has an element of being obliged to take an active role in enhancing your own wellbeing. Nature is healing people in so very many different ways. The issue is being able to motivate yourself and I think a prescription from a GP makes you feel more obliged and more motivated."

Patient, East Craigs Medical Centre

"I think 'prescription' is an appropriate word because it means that we're endorsing it medically and saying, 'we think this is good for you, or could be good for you'".

GP, St Triduana Medical Practice

The prescription itself takes the form of a leaflet and seasonal calendar of nature activities produced by RSPB Scotland. The materials (outlined in Section 3) provide ways for GPs to initiate discussion about the potential health benefits of nature during a consultation, as well as providing the local information needed to give GPs the knowledge and confidence to prescribe. It's up to the GP to decide if a Nature Prescription is appropriate, the form the prescription will take, and how it is communicated. Therefore, how and when a Nature Prescription is given will depend on the experience and expertise of the prescriber, as well as the patient's individual condition, needs and interests.

"It is easy to forget just how helpful going for a walk in the woods, beach or park lifts your spirits, especially with "life" getting in the way. Having the "permission" to take time out and reconnect with nature has made a huge difference. It is a powerful and deep emotional boost/tonic that does help, as simple and basic as it may seem."

Patient, Leith Mount Surgery

The materials offer a variety of options for engaging with nature and are designed to encourage patients to explore ways of connecting that are personal and meaningful to them. Some of the activities suggested may include forms of 'green exercise' (physical activities in the presence of nature) ⁽⁵⁾. Exercising in natural environments, such as walking in local parks or woodland, active travel, outdoor recreation or sport, can, in itself, be good for physical and mental health ^(6, 7) and research has shown that exercising outdoors is more beneficial to mental health than indoor activities ⁽⁸⁾. However, Nature Prescriptions moves beyond simply being active outdoors and recognises that, for some patients, the positive health benefits of nature connection may result from less active experiences, such as observing wildlife, experiencing nature sounds, or reflecting on pleasurable moments in nature ^(9, 10, 11).

"I have got myself a bird feeder for my garden and witnessed so many different types of birds. I see so many beautiful colours and types of plants and flowers when I am out that I had previously ignored. Just sitting listening to the breeze in the leaves and birdsong clears my mind and slows my breathing, calming me. I have become so much more aware of my body, feelings and surroundings. I finally feel like I am in the present and awake."

Patient, Leith Mount Surgery

The key focus of a Nature Prescription, and a fundamental reason for the RSPB's commitment to the project, is to encourage emotional and meaningful *connections* with nature that not only support wellbeing, but also have the potential to engender a personal investment in the protection of wildlife and environments. Connection to nature refers to the way we relate to and experience the natural world and includes a mixture of feelings, attitudes and actions ⁽¹²⁾. Nature connectedness can change over time ⁽¹³⁾ and has been shown to be an important predictor of pro-nature behaviours ^(14, 15, 16, 17). By actively noticing and engaging with nature, we can cultivate a sense of curiosity, joy and appreciation that is positive for our wellbeing and potentially for the conservation of the natural world. This is because as nature restores and nurtures us, it becomes more likely that our concern and care for nature will deepen. It is this reciprocal relationship that is at the heart of Nature Prescriptions.

Importantly, Nature Prescriptions is not intended as a replacement for standard treatments: instead, it works in ways that are complimentary to traditional prescriptions and methods for improving people's health. For instance, nature can be prescribed alongside medication but, equally, it ties in well with the growing interest in developing low cost and drug free alternatives, as well as person-centred health care.

"It's just like any kind of medical or non-medical or social intervention that we might do in primary care. We always try and choose what would fit that patient. So, you would ask if they are interested, and if they said no, that's fine, but if they said yes, you would explore it a little bit more to see what is suitable. It's a patient-centred job that we do, and this is something in my toolkit that I can use for certain patients to help meet some of their needs."

GP, St Triduana Medical Practice

While the primary focus of Nature Prescriptions is on *individual* connections with nature, it can also work well with group activities and social prescribing approaches which involve community-based green health initiatives. Social interactions in natural environments, or 'green spaces', can potentially bring added health benefits ^(18, 19) and community support can help patients access and experience natural environments safely, tackle health inequalities, provide a sense of belonging, and address specific needs, such as social isolation or loneliness ⁽²⁰⁾. Although community engagement can have a propensity to treat nature as a human resource, it can also take the form of environmental conservation projects and volunteering activities which not only benefit personal wellbeing ⁽²¹⁾ but also foster quality greenspaces and thriving local wildlife for the benefit of all. Therefore, the Nature Prescription materials also include information about local groups and opportunities for community engagement, with further signposting provided by the GP/prescriber and Link Worker, where available.

"Nature has no side effects, it's easily accessible and available and has multiple benefits, not just to mental health but to physical health as well. I think even for us as health professionals, Nature Prescriptions has made us realize how valuable this is, how beneficial this is, how under used and how much we should be promoting it over and above medication."

GP, East Craigs Medical Centre

Figure 1. What is a Nature Prescription?

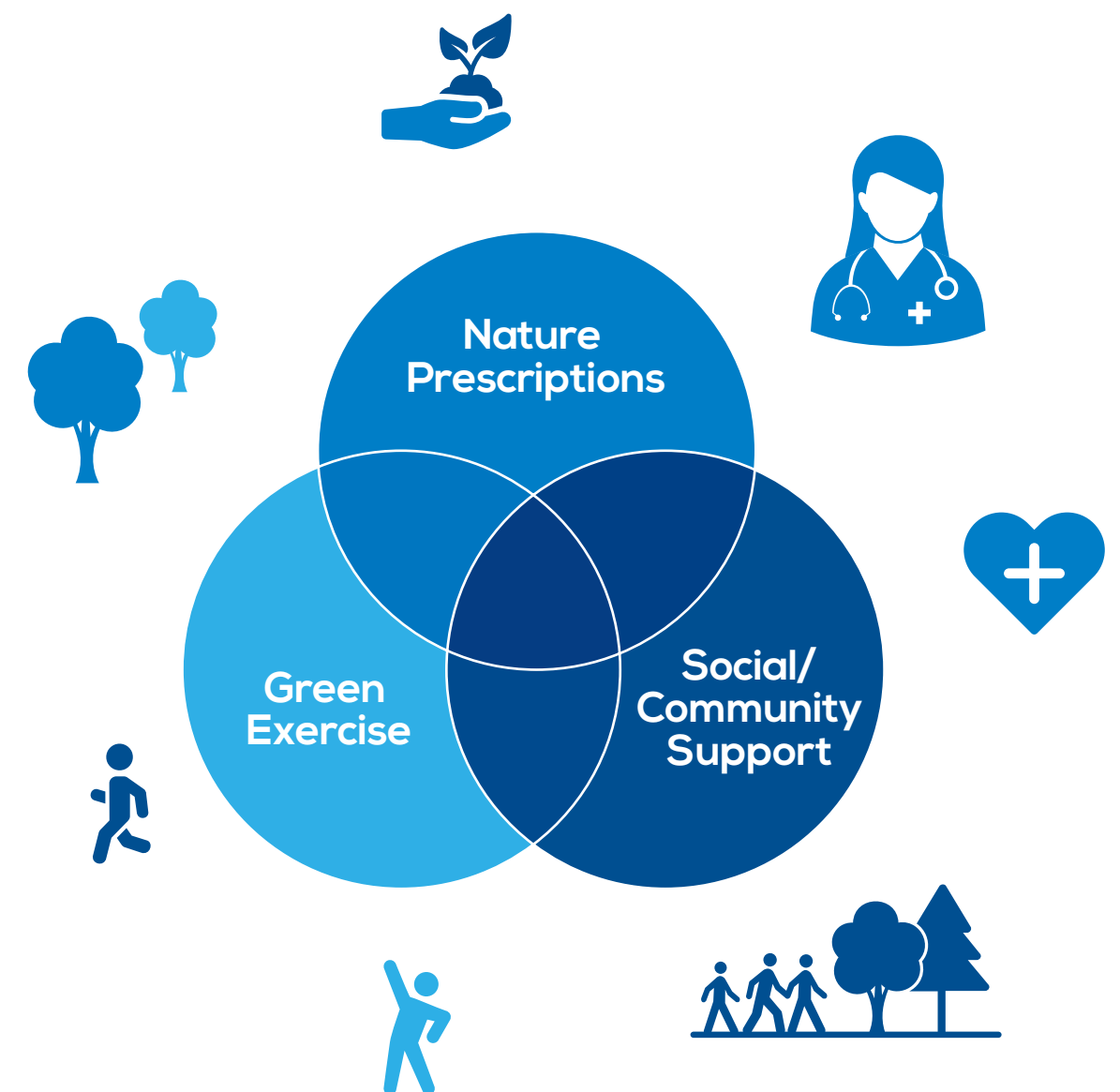


Figure 1 summarises the complementary relationship between Nature Prescriptions, Green Exercise and Social/Community Support. Clearly, there are very productive areas of overlap, and in some cases, GP practices may work collaboratively with green health providers to encourage patients to take advantage of the opportunities they offer and to tailor activities to patients' specific needs. Ultimately though, Nature Prescriptions is distinguished by its formal prescription from a medical practitioner (rather than "self-prescription") and by its focus on developing personal, ideally reciprocal, connections and relationship with the natural world. Whether working in isolation or in combination with other green health approaches, Nature Prescriptions has the potential to play a significant role in accessing the benefits of 'Our Natural Health Service' ^(22, 23).

2 Nature Prescriptions Background

2.1 Origins in Shetland

The idea behind Nature Prescriptions was first introduced by Helen Moncrieff and Karen MacKelvie of RSPB Scotland who were looking for new ways to work with local communities and support nature in Shetland. At that time, they were inspired by a report produced by Dr William Bird for the RSPB ⁽²²⁾ which highlighted the mutually reinforcing benefits of connecting people with nature. In 2017, they carried out focus groups with local GPs and practice staff to explore bringing a 'Nature Prescription' into Health Centres in Shetland, to both support the health and wellbeing of the community and potentially to help nature too. Karen explained:

"It's a simple idea: get our most trusted health professionals (GPs), to recommend that people seek nature as a way of feeling better. As a result, people form deep connections to nature through an association with better health. The value placed on nature means more people are likely to step up to save it in the future."

Karen MacKelvie, Community Engagement Officer, RSPB Scotland

A pilot was started at Scalloway Health Centre where all six GPs were given access to a Nature Prescription leaflet and 'Calendar of Ideas' (see Section 3). These materials were developed by RSPB Scotland in consultation with health care professionals and were intended to support GPs in helping patients access the benefits of nature for health, where appropriate. One GP said:

"I regularly encourage patients to seek the outdoors and get more active, but I don't always have time to show patients what they could get involved in. The leaflet would be great back-up information for patients who sometimes struggle to think of what they would do outdoors... it would help me involve patients with the natural wonders we have in abundance right here on our doorstep."

GP, Scalloway Health Centre

The pilot was well received by both GPs and patients, resulting in Nature Prescriptions being rolled out to all ten GP practices across the Shetland Isles in 2018.

"Getting out and seeing what nature is doing is a strategy I use myself regularly, but haven't much been in the habit of recommending to patients. This project from the RSPB provides a structure which makes it easy to do this."

GP, Levenwick Medical Practice



2.2 The Edinburgh Pilot of Nature Prescriptions

The Shetland Nature Prescriptions initiative received a great deal of media attention, both locally and internationally, which led to ongoing enquires and interest from health care professionals and green health providers. However, the success of the project was largely based on anecdotal evidence from both GPs and patients, and more thorough research was needed to investigate both the benefits and process of prescribing nature.

RSPB Scotland was also interested to learn if Nature Prescriptions could be delivered in an urban context and to explore the potential for extending it throughout Scotland. Therefore, in September 2019, work began on an urban pilot of Nature Prescriptions. A few GPs in Edinburgh had already expressed an interest in the project and so, with the support of Edinburgh and Lothians Health Foundation (the official charity of NHS Lothian) and funding provided by the RSPB, an Edinburgh pilot of Nature Prescriptions was formed.

Frog by Ben Andrew (rspb-images.com)



Ian Mackenzie, Green Health Programme Manager for Edinburgh and Lothians Health Foundation said:

“NHS Lothian recognises the importance of everyday contact with nature and the positive impact it can have on mental health and reducing stress. Many of us have experienced the role that nature and greenspaces have on our health and wellbeing. This is backed up by a growing evidence base from organisations including the World Health Organisation and NICE that shows contact with nature and access to greenspace is good for our health. As part of our Greenspace and Health strategy ⁽²⁴⁾, the Nature Prescriptions pilot is a great opportunity to test out how we can unlock these benefits for more people.”

The Edinburgh pilot, which involved five GP practices, was due to begin in March 2020 but was paused as GPs and practice staff dealt with the demands of the onset of COVID-19. During this time, access to green spaces and connecting with nature became even more important as we faced restrictions on our movements and time spent outdoors. In many ways, the pandemic has led to a new awareness and appreciation of local wildlife and natural environments, with numerous reports of people finding comfort in nature during lockdown ^(25, 26, 27). The RSPB also witnessed a rise in the number of people sharing sightings of birds and wildlife that they had never noticed before, as people tuned in to nearby nature.

However, the pandemic also highlighted inequalities in access to and engagement with nature ^(28, 29) and exacerbated an emerging health crisis, with interrupted programmes of screening, diagnoses and treatment, and growing numbers of people needing mental health support ^(30, 31). Although the pilot was paused, the practices were still encouraged to continue using the Nature Prescription materials, where appropriate. A ‘nature at home’ online calendar was also created to provide ideas for connecting with nature during lockdown and to offer additional support to patients who were shielding or unable to access local green spaces (see Figure 2).

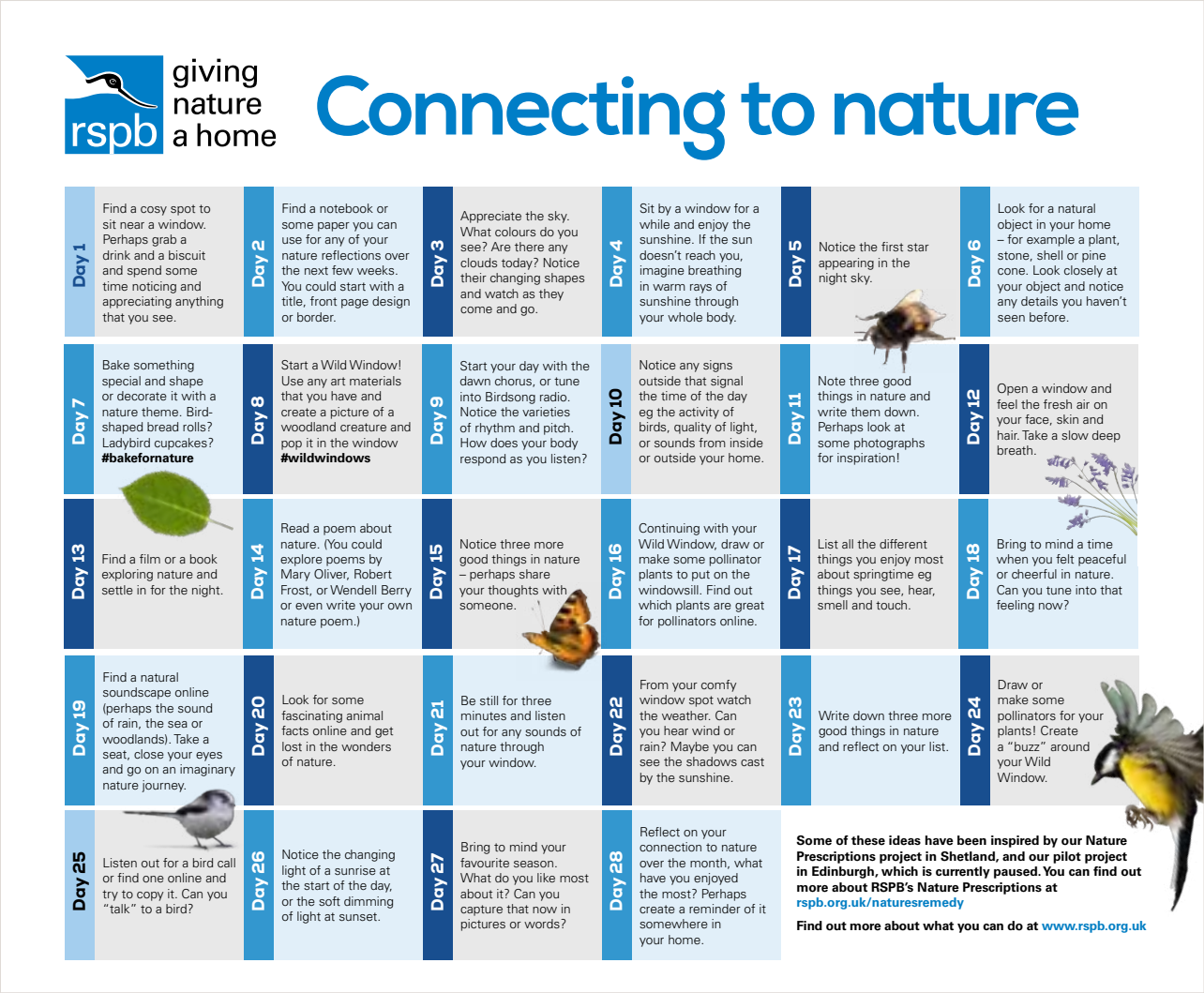
“Depression and anxiety symptoms have increased during the pandemic and connecting with nature has provided relief for patients. It has been of huge benefit to be able to issue something positive for our patients.”

GP, Leith Mount Surgery

Heather by Andy Hay (rspb-images.com)



Figure 2. Connecting to Nature at Home Calendar



It was hoped that these materials would not only benefit patients, but also support GPs themselves, along with other practice staff, as they dealt with the unprecedented demands and constraints of the pandemic. A few of the GPs said that having the materials reminded them to “take a break in nature” for their own health too.

“This looks really good for my patients and for me and my family!”

GP, Inchpark Surgery

“I think it's such a lovely idea and in a way it came at a good time because it's something positive when everything else was rather negative.”

GP, St Triduanas Medical Practice

Despite the ongoing stresses and strains of the COVID-19 pandemic, the GP practices agreed that the research trial should begin again, with one GP stating that “Nature Prescriptions is needed now more than ever.” The pilot was re-launched in late September 2020 and prescription data was recorded until June 2021.

3 Nature Prescriptions Materials

A crucial element of Nature Prescriptions is the materials themselves. The two key resources used for prescribing nature are the Nature Prescriptions leaflet and the monthly calendar of nature activities and ideas. The materials used in the Edinburgh pilot were developed and adapted from the original leaflet and calendar created for the Shetland Nature Prescriptions project in 2018 ⁽³²⁾ (see Figure 3). The original materials were designed in consultation with local healthcare professionals and combined RSPB Scotland’s knowledge and understanding of local nature with the latest research on nature connection, and how it can best support health and wellbeing.

In early discussions, Edinburgh GPs and practice staff were inspired by the images and suggestions offered in the Shetland materials, and by the fact that these were specific to the local area e.g. ‘find a grottie buckie’ (cowrie shell) or ‘think about a time when you were peerie (young) and felt a connection to nature...’

Puffin in Shetland by Mark Sisson (rspb-images.com)



Figure 3. Shetland Calendar



January

- ☐ Step outside – be still for three minutes and listen
- ☐ Really look at a lichen (a pair of upside-down binoculars make an excellent microscope!)
- ☐ Make a list of broch sites you’d like to visit and tick one off the list
- ☐ Count the birds in your garden. Maybe you could keep a “window list” of what you’ve seen?
- ☐ Take part in the Big Garden Birdwatch – visit rspb.org/birdwatch for more information
- ☐ Get out “whatever the weather” and feel the exhilaration of wind and rain on your face
- ☐ Visit the Braer site
- ☐ Walk the core path at Lunga water - look out for mountain hares
- ☐ Go looking for seabears after westerly gales.



February

- ☐ Draw a snowdrop
- ☐ Buy a notebook and “write to yourself” sketch or jot down your thoughts and feelings, adding insights about nature as you go
- ☐ Follow the course of a burn
- ☐ Look for tracks and signs of animals
- ☐ Beachcomb for shells, do a mini-Redd-Up or both. Record your beach clean on the 2minutebeachclean app. or see nurdlehunt.org.uk
- ☐ Make a bird bath (an upside-down bin lid will do)
- ☐ Watch a corbie (raven) – at this time of year you can see courtship displays, which often include dramatic tumbling and flipping in the air.
- ☐ Make your own windsock from a hoop and material – appreciate the speed of the wind
- ☐ Start bagging Shetland’s 19 Marilyns (they are slightly smaller than Munroes). See shetland.org for details
- ☐ Plant some bulbs.

When it comes to natural environments, Shetland has a unique and inspiring landscape, with opportunities to experience puffins, humpback whales and dolphins, not to mention the magical northern lights (perhaps quite different from what you might experience in a local Edinburgh park!) However, the Shetland materials offer a range of ways of connecting with nature for health, regardless of ability, confidence or experience in nature, and many of the activities relate to everyday contact with nature which can be easily transferred to an urban environment.

The city of Edinburgh has a wealth of parks, hills, woodland, rivers, lochs and shoreline, as well as gardens, streets and communities which provide homes for resident and visiting wildlife. This means that there are lots of opportunities for engaging with nature, both locally and across the city. The Edinburgh leaflet (see Figure 4) provides a number of suggestions for connecting with nearby nature as well as links to local parks, walking paths and groups. The leaflet also includes a ‘tickbox’ of different lengths of nature walks, should the prescriber feel that this would be beneficial to the patient’s health. There is some evidence that spending a specified amount of time in natural environments can be good for health ⁽³³⁾, however, the main aim of the materials is to encourage patients to explore ways of discovering the benefits of nature for themselves, rather than being goal-oriented or time-specific. The focus of a Nature Prescription is nature connection and engagement, rather than simply exercising outdoors with nature as a ‘backdrop’. The calendar compliments the leaflet by suggesting additional seasonal activities, places to visit and wildlife to notice each month (see Figure 5).

“The resources just help, and you perhaps notice things that you may not have otherwise, and engage with nature in a way that you might not have otherwise done.”
GP, East Craigs Medical Centre

Figure 4. Edinburgh Nature Prescriptions Leaflet

Tune into nature...



Some ideas to get connected:

- ☐ Find your "sit spot" – a favourite place in nature to rest and just be. Visit often and get to know the local wildlife.
- ☐ Open your window and listen to the sound of rain.
- ☐ Smell the fragrance of yellow gorse blossoms.
- ☐ Visit Edinburgh's Seaside and touch the sea.
- ☐ Look for the first star appearing in the night sky.
- ☐ Get to know a city tree and notice how it changes through the seasons.
- ☐ Notice three good things in nature. How do you feel as you bring these to mind?
- ☐ Watch crows play.
- ☐ Follow the journey of a leaf floating downstream.
- ☐ Discover a green space in the city that you've never been to before.
- ☐ Appreciate a cloud.
- ☐ Walk barefoot in the grass. What do you feel underfoot?
- ☐ Volunteer at a community garden or clean up.
- ☐ Listen out for five curious sounds in nature. How does your body respond as you listen?
- ☐ Have lunch in a local park. Watch birds foraging for their lunch.
- ☐ Head to your favourite hilltop and take in the sunrise or sunset over the city.
- ☐ Give nature a home in your garden. Maybe plant wildflowers for bees and butterflies. Visit [rspb.org.uk](https://www.rspb.org.uk) for more ideas.

The full calendar of nature prescription activities is available at participating Health Centres.

"Nature can be seen as a great outpatient department whose therapeutic value is yet to be fully realised."

Dr William Bird

Find a park or natural heritage site near you:

mypark.scot
edinburghoutdoors.org.uk
edinburgh.gov.uk/parks-greenspaces/natural-heritage-sites

Explore Edinburgh's walking paths:

edinburgh.gov.uk/quietroutes

Discover local walking groups:

pathsforall.org.uk
ramblers.org.uk
edinburghleisure.co.uk/ageing-well-walks

Fun nature ideas for families:

rspb.org.uk/fun-and-learning-for-families/family-wild-challenge/

Volunteer to help nature thrive:

edinburgh.gov.uk/friends-edinburgh-greenspace
lcv.org.uk

Directions to nature:

Head to your nearest front door.

Nature Prescriptions is a pilot project designed by RSPB Scotland in collaboration with NHS Lothian and GPs. We welcome and value feedback about your experience.

Contact us

RSPB Scotland, 2 Lochside View, Edinburgh Park, Edinburgh EH12 9DH Tel: 0131 317 4100
Email: natureprescriptions@rspb.org.uk

Cover image by benedek (istockphoto.com); robin and blackbird by RSPB. The RSPB is a registered charity in England and Wales 207076, in Scotland SC037654. 030-0709-19-20

Working together:



giving nature a home
Scotland



NHS
Lothian

The specific activities chosen for the materials aim to encourage engagements with nature that support mental and/or physical health. Some of the suggestions involve physical activities outdoors, such as going on a woodland walk, following the course of a burn, or visiting Edinburgh's seaside and touching the sea, whilst others can be enjoyed from the comfort of home, such as opening the window and listening to the sound of rain.

Some of the activities focus on appreciating the beauty in nature, such as taking in a sunrise or sunset over the city, listening to the dawn chorus, or looking for the first star appearing in the night sky. Noticing and experiencing nature's beauty has been strongly correlated with the wellbeing benefits of nature connection ⁽³⁴⁾ and can increase positive emotions such as feelings of awe, a sense of wonder and being part of something bigger than oneself. Walking in an area of natural beauty has been shown to reduce unhelpful mental states, such as rumination ⁽³⁵⁾ and taking an 'awe walk' (where you intentionally shift your attention outward instead of inward) can reduce daily distress and improve emotional wellbeing ⁽³⁶⁾.

"This isn't just going for a walk. This is actually enjoying a walk."

ANP, East Craigs Medical Centre

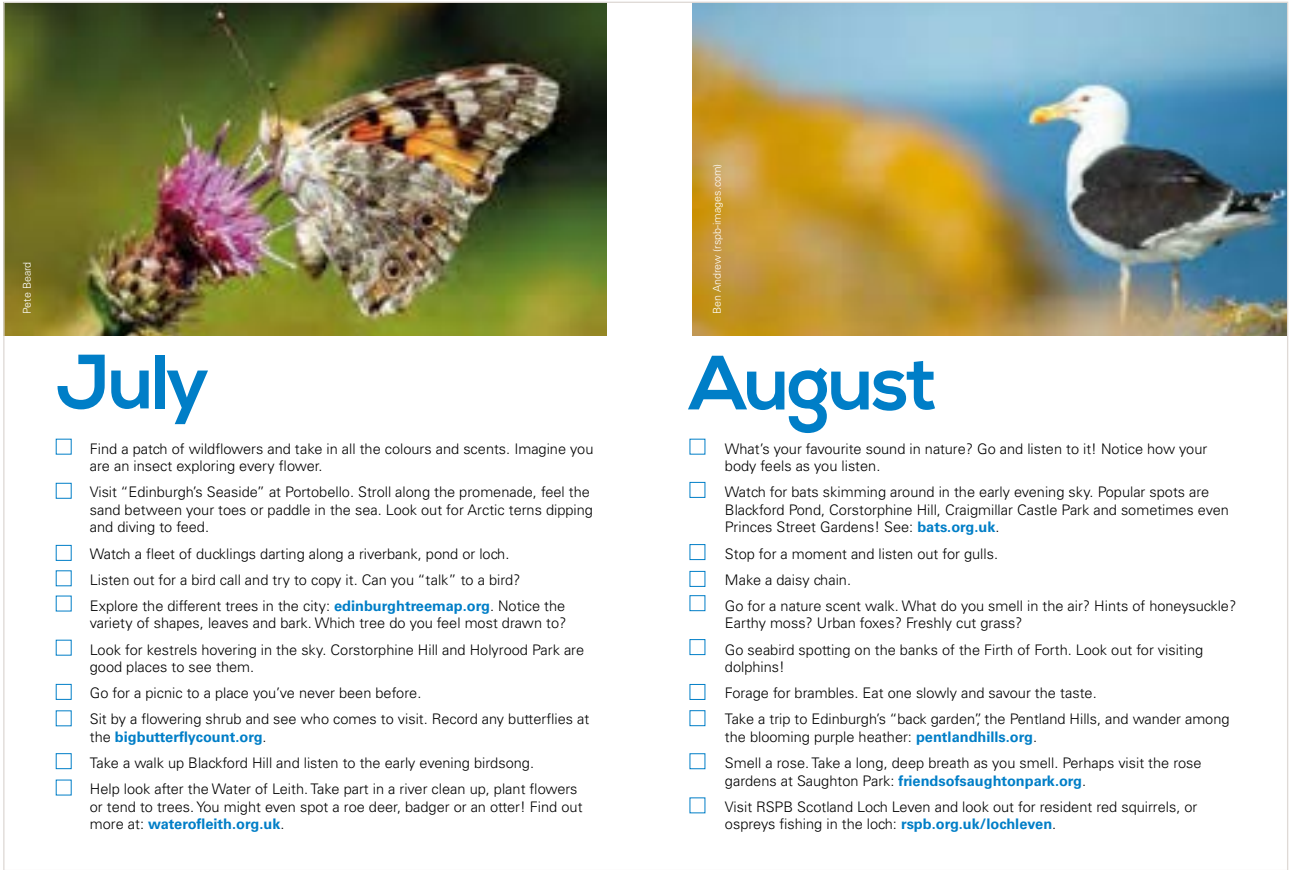


Sunrise view looking over at Edinburgh from Arthur's Seat by Shunrei (istockphoto.com)

In particular, the materials promote emotional engagements with nature which encourage feelings of gratitude, appreciation and care for the natural world: for example, appreciating a cloud or the first signs of spring, or watching young swans learning how to fly. Alongside this, there are suggestions for taking compassionate action for nature, such as making a home for wildlife, planting bulbs or volunteering at a park or river clean up. Regularly noticing the 'good things' in nature, particularly in urban environments, has been shown to improve levels of both nature connection and happiness, ^(37, 38) whilst taking action for nature can improve mental wellbeing, enhance positivity and a sense of purpose ⁽³⁹⁾, as well as helping wildlife thrive.

The activities also focus on experiencing nature directly through the senses, such as noticing the changing light, colours and scents of autumn, or getting out 'whatever the weather' and feeling the wind and rain on your face. Patients are encouraged to be with nature and notice the experience itself rather than focus on knowledge about nature. Studies exploring the relationship between nature connection, wellbeing and pro-nature behaviours have shown that knowledge of nature is less important than noticing and engaging with nature through everyday activities ^(40, 41).

Figure 5. Edinburgh Nature Prescriptions Calendar



Similarly, mindful enquiry has been woven into the suggestions presented in the materials in order to further cultivate an awareness and appreciation of nearby nature. Whilst Nature Prescribing isn't a form of mindfulness teaching per se, the language used conveys key attitudes adopted in mindfulness practice such as non-striving, non-judging and having a 'beginner's mind' ⁽⁴²⁾. Patients are encouraged to bring a friendly curiosity to how they are relating to their experiences and notice any responses or benefits: for example, 'What was your favourite nature moment? How does it feel now as you bring it to mind?'. Incorporating mindfulness attitudes, language and enquiry can not only deepen nature connection and experiences ⁽⁴³⁾ but can also potentially enhance patients' psychological health and sense of wellbeing ⁽⁴⁴⁾. Overall, the materials aim to inspire patients (and prescribers) to explore and enjoy the simple pleasures of being with nature and to find ways of engaging that are mutually beneficial.

During early pre-pilot consultations with GPs, a few of them mentioned that they weren't from the area in which they worked and felt that they needed more knowledge of the surrounding nature to help them prescribe. Therefore, prescribers were not only given the prescription leaflets and calendars, but also a map of local green and blue spaces. The maps were adapted from the local QuietRoutes provided by the city of Edinburgh Council ⁽⁴⁵⁾ and included areas of particular interest close to the practices. These maps could then be photocopied for patients if required and/or placed on the practice website to be accessed remotely. In addition, each Practice Manager was given extra resources and packs for prescribers, along with posters to raise awareness of the pilot, and larger versions of the monthly calendar to be placed in the reception and waiting areas.

"I've been prescribing nature but didn't know what activities to suggest or where to tell patients to go. You're now giving us the materials we need to do this!"

GP, Inchpark Surgery

4 Edinburgh Pilot Research

4.1 Research Aims and Objectives

The overarching objective of the Edinburgh pilot was to determine whether or not the Nature Prescriptions initiative developed in the geographically contained, and largely rural, context of Shetland could be successful in an urban area. The ultimate outcome for Nature Prescriptions is to improve patient health and engagement with nature, by providing GPs, and other prescribers, with the tools and information needed to prescribe. Therefore, the pilot aimed to explore the efficacy of the Nature Prescriptions pack in promoting nature prescribing behaviours, the process and experience of prescribing and, where possible, the outcomes for patients.

More specifically, the study aimed to investigate:

1. Whether GPs support nature prescribing for mental and/or physical health
2. The prescription process – what helped, challenges, and support needed
3. The health conditions for which nature is prescribed
4. Whether a Nature Prescription is beneficial to patients and, if so, in what ways
5. Which nature activities are most frequently pursued
6. The obstacles for patients' participating in a Nature Prescription

In pursuing these lines of inquiry, the pilot also aimed to establish whether involvement in the Nature Prescriptions project had an impact on connection with nature for both prescribers and patients and whether this, in turn, engendered a personal commitment to the preservation of nature.



4.2 Pilot Participants

Five GP practices were involved in the pilot:

GP Practice	Edinburgh Locality/GP Cluster	Patient Register
East Craigs Medical Centre	North West – Edinburgh Tower	8,500
Leith Mount Surgery	North East – Edinburgh Bridge	11,400
Mill Lane Surgery	North East – Edinburgh Leith	5,500
Inchpark Surgery	South East – Edinburgh South	5,700
St. Triduanas Medical Practice	North East – Edinburgh East	11,500

One other GP practice, based in the South West area of Edinburgh, was initially involved but due to the ongoing demands of the COVID-19 pandemic, decided not to continue when the pilot was re-launched in September 2020. Having the GP practices distributed across different locations in Edinburgh provided the opportunity to reach diverse patient populations and explore the range and quality of green and blue spaces available.

In terms of the prescribers, the original aim was to focus solely on the GPs’ experience, as was the case in the Shetland project. However, during initial consultations with practice teams, three of the practices suggested that other members of staff were also well qualified and well positioned to prescribe nature. We were keen to involve practices in the design of the pilot, and to explore the best way of delivering Nature Prescriptions, so these people were also included. For the remainder of this report, the term ‘prescriber’ will be used to encompass all of the various roles involved. (See Figure 8 for details of the prescribers involved in the trial.)

4.3 Research Design and Process

Both quantitative and qualitative methods were used to evaluate the effectiveness of the Edinburgh pilot. The research process involved: semi-structured interviews with prescribers; pre- and post-pilot prescriber questionnaires; formal recording of prescription data; and anonymous patient surveys.

Ethical approval for all phases of the trial was provided by the RSPB Centre for Conservation Science Human Ethics Committee. All prescribers provided informed, written consent and participation was voluntary, with no incentive or reward. Due to ethical considerations, RSPB Scotland had no direct contact with the patients involved. All patient data was collected and provided via the Practice Managers and staff, and their continual support proved invaluable throughout the pilot.

Pre-Pilot Phase

Before beginning the nature prescribing process, prescribers were asked to complete a questionnaire to investigate their current attitude towards nature prescriptions, whether they currently prescribe nature for health and if so, the activities prescribed. The questionnaire also provided details of prescriber gender and age to gauge if this had any influence on prescribing activity.

An unexpected outcome of the Shetland pilot was the influence that nature prescribing had on some of the GPs’ own connections to nature, and their own wellbeing. Therefore, the pre- (and post-) pilot questionnaires also included questions related to the prescriber’s perceived levels of nature connection. This would help identify any changes in nature connection during the trial and also allow some determination of whether levels of nature connection influenced prescribing. Given GP time constraints, nature connection was measured using the short-form Nature Relatedness Scale (NR-6) developed by Nisbet and Zelenski (2013). The NR-6 scale has proven accurate in assessing the extent to which someone identifies with nature and their perceived relationship with nature through behaviours ⁽⁴⁶⁾.

Pilot Phase

To begin the pilot, each prescriber was given a pack of resources which included background information and guidance on the prescribing process (see section 3). The prescribers were asked to keep a record of each prescription in order to gather anonymous data on the number of prescriptions given, the age and gender of the patients, and the conditions prescribed for. To assist with this, each prescriber was given a register to record prescriptions and the GP Practices also created a unique code for nature prescribing, which made it easier to trace and extract the data required. Practice Managers were given extra materials to support prescribing, when needed, throughout the trial.

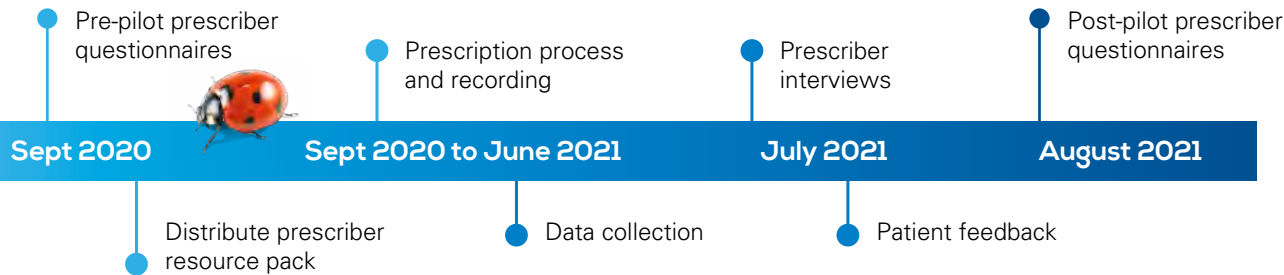
Post-Pilot Phase

Once the data collection period had ended, semi-structured interviews were conducted with 19 prescribers across the five practices. The interviews (which lasted approximately 15 to 30 minutes, depending on time available) enabled more thorough discussion of the prescription process, patient responses, and whether being involved in the pilot had influenced the prescribers’ own connection to nature. All interviews were recorded and transcribed verbatim.

Patients were invited to complete an anonymous post-prescription survey to provide feedback about their experience of their nature prescription, the types of nature activities pursued, and any benefits gained or challenges experienced. To begin with, the practices contacted patients by sending a text message with a link to the online survey, available via the SurveyMonkey platform. However, this method resulted in a very low response rate and so postal questionnaires were sent directly to patients (via the practices) and included a pre-paid envelope (provided by RSPB Scotland). This proved more effective in eliciting a response, with a total of 65 patients completing a post-prescription survey.

Finally, prescribers were asked to complete a post-pilot questionnaire. Once again, this included the short-form Nature Relatedness Scale (NR-6) along with questions related to the prescriber’s experience of nature prescribing and whether they would be prescribing at a future date. The timeline for the research process is outlined in Figure 6.

Figure 6. Edinburgh Pilot Research Process



5 Edinburgh Pilot Results

5.1 COVID-19 Implications

The very fact that the pilot was undertaken, and that it resulted in medical practitioners prescribing nature for health, demonstrates that Nature Prescriptions can be delivered in an urban context. That this occurred under the unprecedented constraints of the COVID-19 pandemic adds reinforcement to this conclusion. The move to a triage system of care in March 2020, and the closure of most GP practices, meant that the Nature Prescriptions Project Manager had very limited access to GPs and other practice staff. This made it challenging to both encourage participation and to communicate the details of the prescribing process. Similarly, the replacement of the majority of face-to-face patient consultations with telephone or digital forms of care meant that prescribers could not show the materials to their patients or discuss them in person. Instead, materials were sent out to patients post-consultation or accessed via the practice website.

“COVID hasn’t helped in terms of selling it to patients. I wish I could speak face to face to patients about the project and it’s also now more difficult to follow up with them as to how they are enjoying the experience.”

GP, Leith Mount Surgery

“I feel limited, as with most things with COVID, because I really like to be able to physically give it to someone and I think that’s limited who I’ve given it too. I would have used it more if we were face-to-face.”

GP, Inchpark Surgery

The closure of waiting rooms also prevented planned approaches to raise awareness of the pilot and evaluate outcomes. For example, video material, posters and paper copies of materials could potentially have encouraged uptake, and plans to gain feedback from patients at the practices via displays and patient participation groups were no longer possible. Additionally, the pilot was complicated by very challenging conditions within medical and care-giving contexts. The pandemic produced unimaginable stress for those trying to look after patients whilst adapting to ever-changing guidelines. This was compounded further by the loss of staff to illness or self-isolation, delayed or interrupted programmes of screening and hospital treatments, and overwhelming demand for GP services, with consultations rising by 50% at certain periods during the pilot.

“This (pilot) occurred at a very difficult time because we were suddenly dealing with unprecedented demand, very distressed patients, patients who wanted to address all sorts of health concerns, but we were still working in a very restricted way. So, for me that was a very hard time. I think I prescribed slightly less then because perhaps I was in a bit more fire-fighting mode for the practice. Everything changed with COVID and so we were desperately trying to keep up with that, while desperately trying to look after and protect people.”

GP, St Triduanas Medical Practice

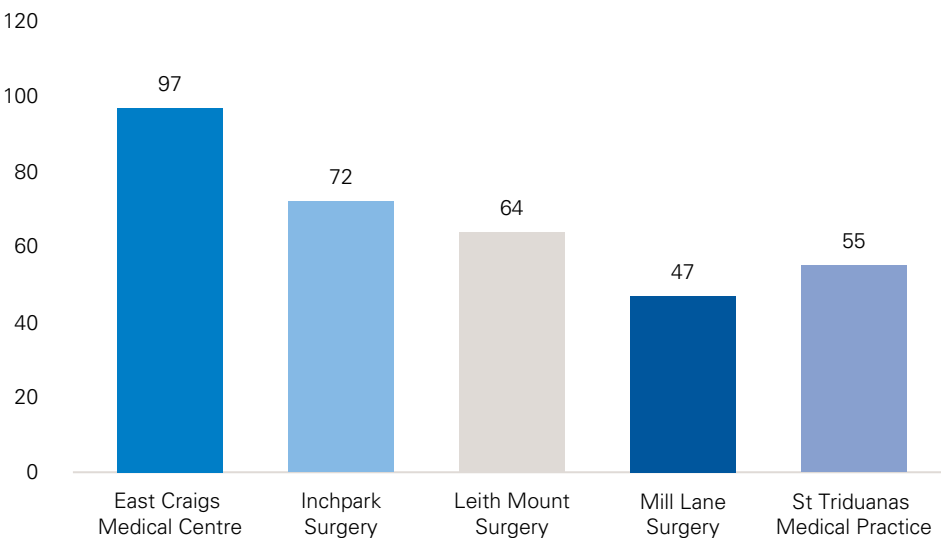
The fact that the people and practices involved in this pilot persevered under these circumstances (often with remarkably good spirits and enthusiasm) underscores the value of the project and the eagerness for introducing nature prescribing as a support for patient health.

5.2 Prescription Recording

Despite the ongoing constraints and pressures of the pandemic, 50 people prescribed nature to their patients during the trial and over 335 Nature Prescriptions were formally recorded across the five practices (see Figures 7 and 8). It’s also worth noting that several sources of evidence make it clear that not all of the prescriptions given to patients were documented. For example, at least eight prescribers confirm that they gave out Nature Prescriptions during the pilot but were unable to keep a record of this. Similarly, interviews with some prescribers reveal that they gave out “quite a few” prescriptions but their formal records list only one or two.

The reasons given for not recording prescriptions reinforce the view that this was not a reflection of disinterest in the project. Most of the prescribers whose reporting was uneven put this down to time pressures, especially during consultations. Other reasons included simply forgetting and the tendency to give a Nature Prescription alongside a traditional medicinal one and thus failing to include the relevant code on their records. Although these gaps and inconsistencies in recording are unfortunate, they all lean toward an underestimation of the number of Nature Prescriptions given during the pilot. Those who committed to the project did their best to follow its protocol and, from the data and feedback received, it seems reasonable to conclude that there was considerable support for Nature Prescriptions by those prescribers involved.

Figure 7. Prescriptions by GP practice



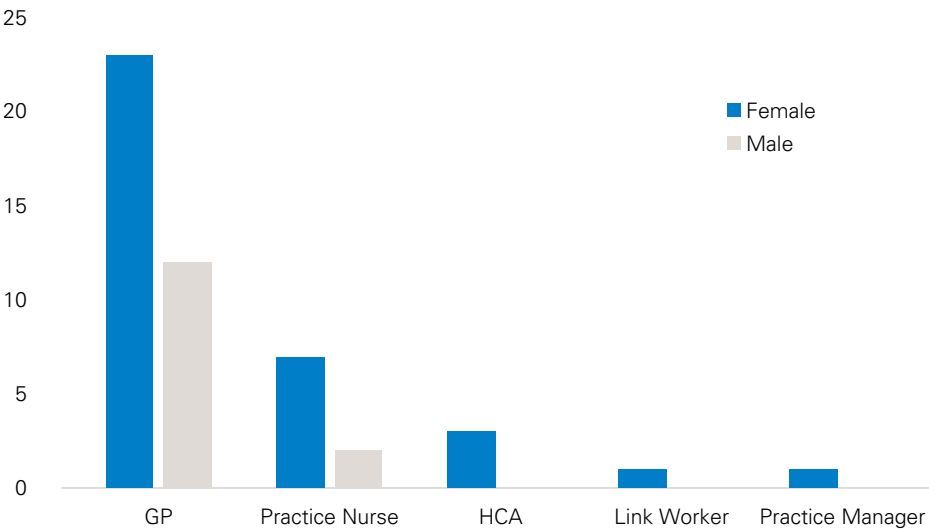
Forget-me-not by Elaine Bradley



5.3 The Prescribers

In keeping with the original design of the pilot, the majority of prescribers involved were GPs (n= 35 or 70%). The other prescribers included nine Practice Nurses (PNs), which includes Advanced Nurse Practitioners and Nurse Practitioners, three Health Care Assistants (HCAs), one Community Psychiatric Nurse (CPN) and one Practice Manager who recorded any Nature Prescriptions given to patients while they waited on appointments. Two Community Link Workers (CLWs) were originally involved in the pilot, however due to illness, only one was able to participate in the trial. Figure 8 provides a breakdown of roles by gender. In Scotland, women comprise approximately 62% of GPs ⁽⁴⁷⁾. In our study, the proportion of women involved in prescribing nature was higher, with 70% of the prescribers identifying as female and 30% as male. The higher proportion of women prescribing is partly due to the inclusion of other roles, (for example, the majority (98%) of registered nurses working in general practice in Scotland are female) ⁽⁴⁸⁾. The gender dimension has been included because, as will be seen, it seems to be an important variable in the level of engagement with Nature Prescriptions.

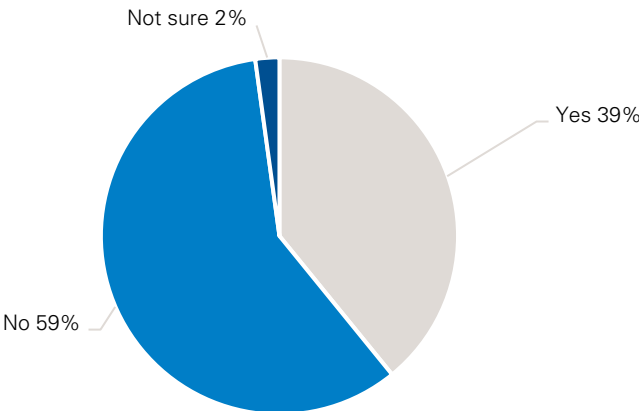
Figure 8. Pilot Prescribers by Role and Gender



5.4 Pre-pilot: Attitudes and Experiences of Prescribing Nature

Given that the five practices willingly participated in the trial, it could be expected that many of the prescribers already had positive attitudes towards nature for health. Indeed, 39% of prescribers were already recommending some sort of nature activity to patients before the pilot began. Interestingly, the types of nature activities recommended tended to be oriented towards physical activity and involved going for walks and exercising outdoors, rather than explicitly engaging with nature. These were often informally suggested alongside other treatments, rather than being formally ‘prescribed’. It’s also interesting to note that the majority of prescribers who were offering some form of nature prescribing were women (49% of women, compared with 20% of men). However, the majority of prescribers (59%) were not prescribing nature-based activities for health pre-pilot (see Figure 9).

Figure 9. Do you currently prescribe nature activities?



Reassuringly, data from pre-pilot surveys showed that the vast majority of prescribers recognised the benefits that nature could provide to patients: 96% of prescribers felt that the nature activities suggested in the Nature Prescription materials could likely, or very likely, assist mental health conditions. Similarly, 98% thought that the nature activities could likely, or very likely, benefit physical health conditions. No one considered the nature activities unlikely to benefit physical or mental health (see Figures 10 and 11).

Figure 10. Do you think that the nature activities suggested could assist mental health conditions?

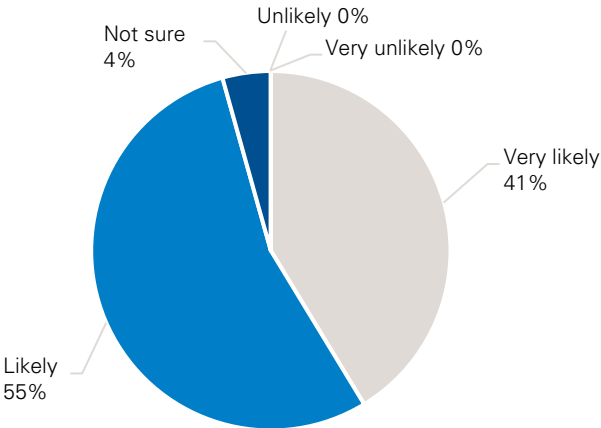
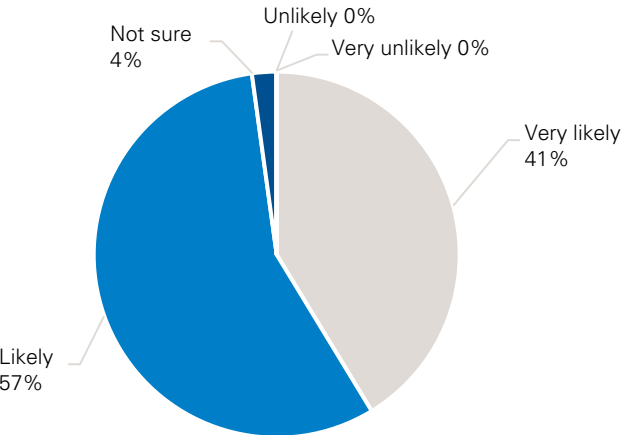


Figure 11. Do you think that the nature activities suggested could assist physical health conditions?



So why aren't prescribers already recommending nature? Despite recognising the benefits for health, prescribers may not be advocating nature due to their own relationship with nature. Pre-pilot questionnaires provided data on prescribers' perceived connection to nature using the NR-6 measure of nature relatedness⁽⁴⁶⁾. The average score of those already recommending nature (NR-6 = 4.24) was higher than that of people not yet recommending it (NR-6 = 3.98). This predisposition towards endorsing nature for health was further underscored when prescribers were asked about their motivation for taking part in the pilot:

"I do like nature and I feel better if I spend time outside, both for my mental health and my physical health. And when I exercise, I like to exercise outside. So, it seemed a bit of a no brainer really to be recommending that to patients to help with their health and their mental health in particular."

GP, Inchpark Surgery

Fern by Michael Harvey (rspb-images.com)



"I'm really keen on being outside and fresh air and exercise, and I think being in green spaces makes you feel much better. It just helps keep you sane! It helps me to cope with the job as well actually to be honest."

GP, Leith Mount Surgery

Some of the prescribers also commented on the potential benefits of being able to offer a more formalised nature prescription for patients:

"I've always been completely convinced of the value of getting outside and exerting yourself to improve your mental health. It fits exactly with what I've tried to do previously with mental health patients and the pilot sounded like a good hook to put that on. There are some people who like the idea of their activity being part of an official organized program. It gives it a bit more gravitas than me just saying, 'why didn't you go out more?'"

GP, St Triduana Medical Practice

"I always recommended going outdoors as a way of managing most mental health issues. So it's quite essential, I feel, to do nature prescribing."

CPN, East Craigs Medical Practice

Other reasons for being involved in the pilot included being able to offer patients an alternative to medication but, equally, to provide additional support alongside current treatments:

"It's great to have something specific to offer to patients that isn't medication."

GP, Leith Mount Surgery

"It has no side effects and it's easily accessible and available. We're always very keen to prescribe things that have no side effects."

GP, East Craigs Medical Centre

"Deprescribing features quite heavily in my portfolio and nature prescribing lends itself very nicely into that kind of mind frame, thinking about lifestyle rather than pharmacology. So I was keen for the start really and so it's quite embarrassing that I haven't prescribed it as often as I might wish."

ANP, East Craigs Medical Centre

"I think recognition of some of the limitations of the existing treatments. Especially for moods and anxiety symptoms and then to broaden that out for people with longer term health conditions."

GP, St Triduana Medical Practice

"We've got so many patients with mental health problems and to just bring something else new that might help with their condition. I think that was very inspiring."

ANP, East Craigs Medical Centre

Prescribers were also persuaded by the enthusiasm and knowledge of fellow GPs as well as current evidence and awareness of nature as a benefit for health:

"Dr. * is quite passionate about it and she presented it very well. I was probably a little bit unsure when I first started, but she explained it very well."

GP, East Craigs Medical Centre

"If you hear about it from someone you know, your colleague, you'll give it a go. I don't currently do it, or have many alternatives, but I do like having that ability to provide something like this to patients."

GP, Mill Lane Surgery

"I think it's been helpful that there's been more media and press recently, not just from the RSPB, but other GPs have been talking about green prescriptions. So, I think that's won over some people who potentially were a bit sceptical."

GP, East Craigs Medical Centre

"I'd heard about it from Shetland, because that was well publicized, particularly in the medical press. I think I'd seen some of that in the British Medical Journal and that was interesting. I have an interest in all forms of support that will help for our patients in whichever form that may come."

GP, East Craigs Medical Centre

When asked if they had any concerns about prescribing nature, most prescribers felt that it was a low-risk option:

"No, I don't. I think that's one of its main strengths is that it's harmless. It's difficult to see how it could be harmful."

GP, Inchpark Surgery

"No, I wouldn't say any concerns. I think it's just an extension of what I think we should be doing anyway and there's an added tool to put into that."

GP, St Triduanas Medical Practice

However, some prescribers did express concerns about how the Nature Prescription might be received by patients:

"Before we started, I was a bit worried that it would come across as being a wee bit patronizing to people. I worried about how I would explain it, you know, saying 'right off you go have a walk, that'll make you feel better'. And also, patient's expectations as well. I worry that they would be like 'oh, but what about medication and what about CBT?'"

GP, East Craigs Medical Centre

"I guess the only thing might be the perception of some of the patients who might think, 'that's a bit wishy washy, that's not going to work', which I don't personally believe in. But I think some people maybe give up on it at an earlier stage, than perhaps is warranted, because of that."

GP, Inchpark Surgery

"I suppose I was concerned, probably, like many colleagues, about what patients' responses would be, whether they would view it as a kind of a lesser treatment option. But I think quite the contrary, there's almost universal interest and motivation from patients. So no, no concerns going forward, certainly."

GP, St Triduanas Medical Practice

All of this suggests that a willingness to adopt Nature Prescriptions is influenced by a predisposition towards nature engagement, knowledge and/or experience of the potential benefits for health, endorsement by peers, as well as societal awareness and acceptance of nature as a support for wellbeing.

5.5 Prescription Data

Figures 12 and 13 demonstrate that the predominance of GPs and women as prescribers is paralleled in the actual number of Nature Prescriptions recorded: GPs gave out 77% of the prescriptions and women, across roles, were responsible for 310 of the 335 total, or 93%. This result could be interpreted in various ways, but the fact that the most committed prescribers were usually those responsible for bringing the pilot into the practice suggests that belief in the value of Nature Prescriptions, and enthusiasm for prescribing, is key to the success of the initiative.

Figure 12. Number of Prescriptions Given per Role

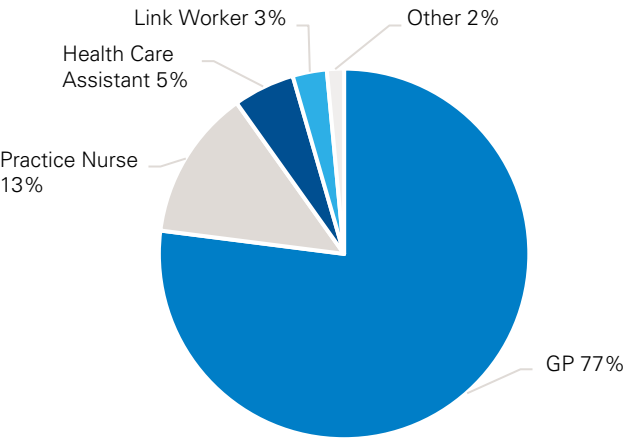
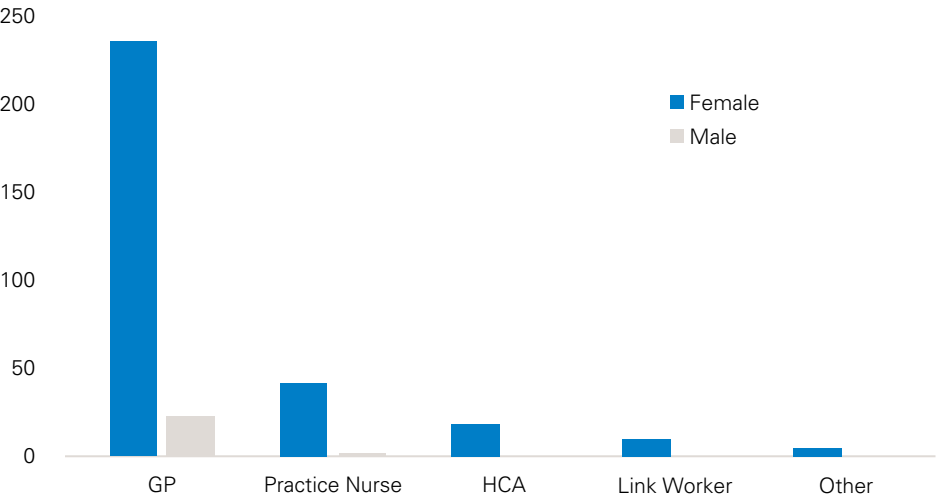


Figure 13. Prescriptions Given by Role and Gender





Snail by Jodie Randall (rspb-images.com)

Prescribed Conditions

In terms of the reason for giving a prescription, 32 different health conditions were identified over the course of the trial (see Figures 15 and 16). Importantly, the majority of prescriptions were given to support the treatment of mental health conditions (69%), with nature most commonly being prescribed for anxiety (35%) and depression (28%). However, the versatility of a Nature Prescription is evidenced by the fact that 17% were also given to address specific physical health conditions (see Figure 14), with the most common conditions being obesity (12%) and diabetes (8%). Furthermore, 10% of patients were prescribed nature to treat both.

Figure 14. Prescribed Conditions

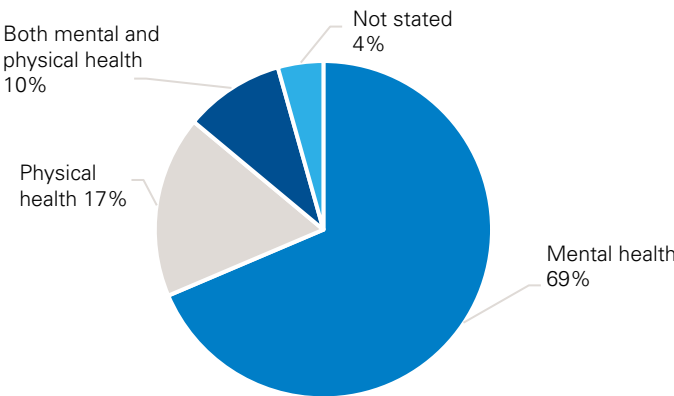


Figure 15. Prescribed Conditions

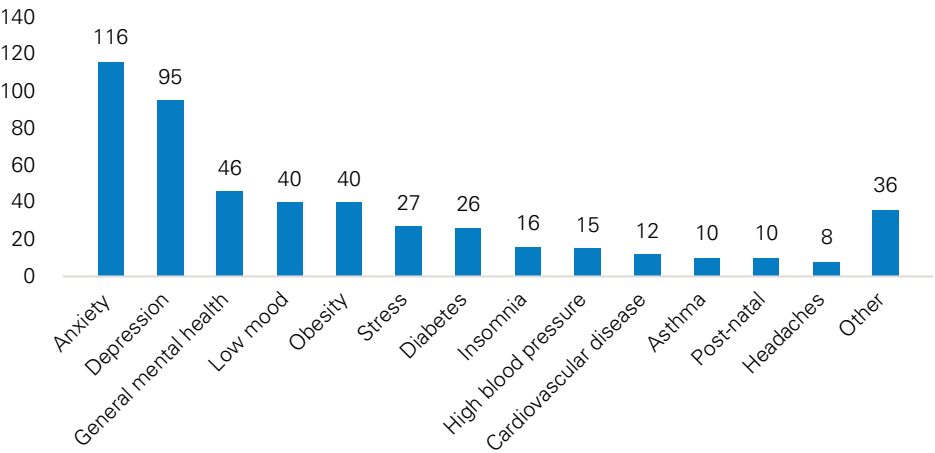


Figure 16. 'Other' Health Conditions

Condition	No. of Prescriptions
Pain Management	5
Reduce Alcohol	4
Stop Smoking	4
Bereavement	4
High Cholesterol	3
Skin Condition	3
Drug Dependency	2
COPD	2
Fibromyalgia	2
Palliative Care	1
Menopause	1
Cystocele	1
IBS	1
ME	1
PTSD	1
Sleep Apnoea	1
Abdominal Swelling	1
Hypomania	1
Hypokalaemia	1

The prescribers themselves decided who should receive a Nature Prescription. Post-pilot discussions revealed that these decisions were based on the prescriber’s experience and perception of the condition most suited to a Nature Prescription, alongside an evaluation of what might be suitable and supportive for each individual patient. In accordance with the prescription data, most of the prescribers commented on the benefits of nature for mental health:

“It’s usually if I’m speaking to the patient for the first time about anxiety and depression, then I think it’s a good time to introduce it.”

GP, Leith Mount Surgery

“I think it’s quite wide ranging, it helps lots of different people, but for me, the main one that’s been really beneficial is for people who are suffering with mental health problems like anxiety and stress and low mood. But there are people who it’s helped physically as well, in terms of losing weight and for people who are diabetic, but it tends to be the more mental health patients.”

GP, East Craigs Medical Centre



Autumn leaves by Michael Harvey (rspb-images.com)

"I have it in my mind, like I have antidepressants in my mind. As the consultation evolves, it usually becomes apparent whether you think this may fit well with what you're doing. Usually, I would set the scene by finding out how much they get outside. So, just gathering information about their current levels of activity and the types of things they do and how they've dealt with challenges, particularly this year. It's not something that would be my opening gambit, but none of my treatments are. But sometimes I will be thinking quite early on that this might be a patient that we should have a conversation with about Nature Prescriptions."

GP, St Triduana Medical Practice

One of the practices found Nature Prescriptions particularly beneficial for post-natal care:

"I particularly find it useful for post-natal depression, because, it's very easily done – mum can put the baby in the pram and just go out. The mums were coming in being a bit blue and some weren't keen on medication because of breastfeeding. It's something that everybody knows about but it's almost like you have to point it out. It's like drinking water, sometimes you have to say, 'water is really good for you'. So I love the simplicity of it. It's just prompting them and making them aware again about connecting with nature and using this natural resource that we have on our doorstep."

GP, East Craigs Medical Centre

"It's been really isolating for patients during lockdown because there are no baby groups... A lot of the post-natal people absolutely love it because they're so tied up with baby and quite often have other children as well, or a new mum with fatigue and even if you're going for a walk, you're not necessarily looking. So, I think the fact that you can go through it and say, 'remember to look for signs of spring', it just makes them focus on something else apart from what's in their head and that's really helpful."

GP, East Craigs Medical Centre

For some prescribers, particularly Practice Nurses and Health Care Assistants, the focus was more on helping patients with physical health conditions:

"It's not so much mental health with me. Diabetes is probably top of the list, also cardiovascular, people with hypertension and who are perhaps overweight, high cholesterol, that sort of thing. History of strokes, it's good for that as well."

ANP, East Craigs Medical Centre

"So I'm seeing a lot of diabetics, people who are overweight, stressed, smoking, all the usual lifestyle factors. I'm using it as a tool to get people to start going outside. I don't even say about exercise, I just say 'why don't you go out for a wee walk and listen to the birds outside, just start being in touch with what you're seeing?' And then, 'oh, if you've enjoyed that, next time you could just up the pace a wee bit.' So I'm using it as an introduction, a tool to get them out the front door and stepping outside."

PN, Inchpark Surgery

Other prescribers viewed Nature Prescriptions as part of a 'toolkit' for a whole range of mental and/or physical conditions:

"It's a feeling you get with a patient. There's a lot of stress. If you're talking to patients and you're not particularly thinking that it's just depression and you're aware there's a lot of life events going on, that can be quite a good 'in', to make them think about their surroundings. I've tried to use it to encourage people to even just go out and exercise a little bit. So rather than saying, 'I think you should go out for a walk', which can be patronizing in a way, I say, 'why don't you go out and look at...?' So it helps in both ways."

GP, East Craigs Medical Centre

"I pretty much give it to everybody because I think everybody could benefit from it really. It's kind of wide reaching. It's not so much that I really decide who to give it to, I just include it as part of the management."

GP, East Craigs Medical Centre

"I think it's natural that it would be really helpful for mental health problems, and I agree with that, but I handed a nature prescription for somebody who just had a heart attack. They had been in hospital, had treatment and they were slowly building up their activity levels, and they're obviously a bit nervous, not as physically fit as they were, kind of anxious about the future, slightly breathless and, actually, a Nature Prescription gave them a little bit of a focus to their activities and gave them a reason for going out. While it was the exercise itself, it took them beyond that, so that in itself was a very positive experience for them. So, I would say it's for anybody."

GP, St Triduana Medical Practice

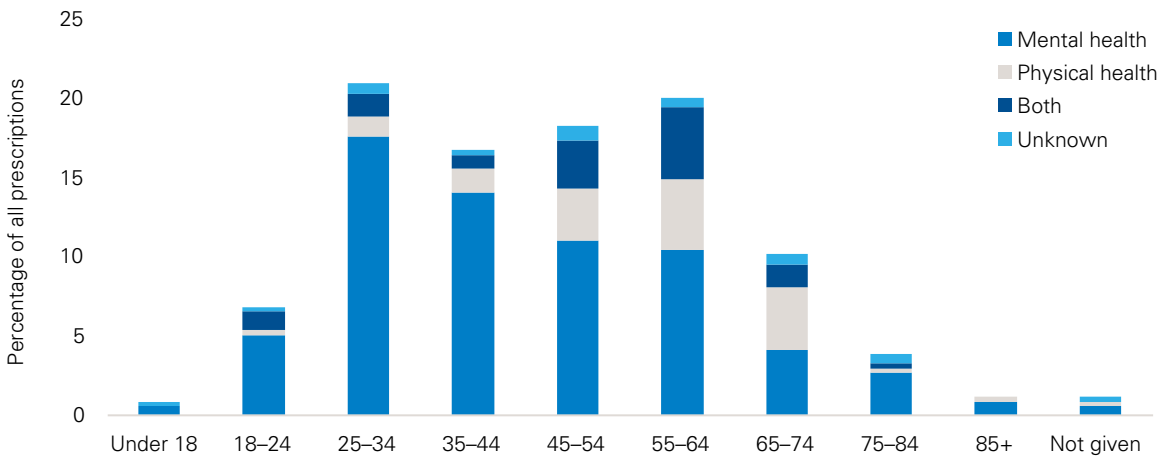
"I've sold it as something that was different from the exercise programs they had been sent before. This is more about actually embracing life again."

ANP, East Craigs Medical Practice

Patient Characteristics

Nature Prescriptions were given to patients across all age groups, with the majority offered to those between the ages of 24–34, closely followed by those aged 55–64 (see Figure 17). Those in the younger age groups tended to receive a Nature Prescription for mental health, whilst older age groups (up to the age of 75) received a significant proportion of prescriptions for physical health. This result is compatible with the Scottish Government’s Health Survey of 2020 which reported highest mental wellbeing scores amongst ages 65–74 and lowest average obesity scores among adults aged 16–44 ⁽⁴⁹⁾.

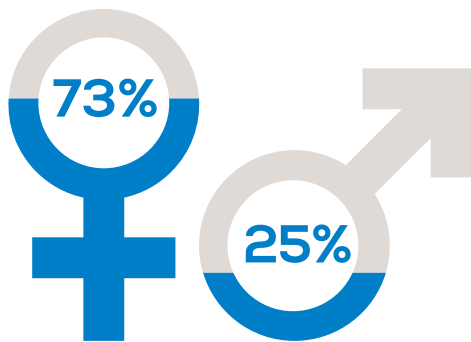
Figure 17. Prescriptions by Age and Health Condition



An unexpected outcome was that, across all age groups, the vast majority of patients who received a Nature Prescription were women (see Figure 18). It’s not clear why prescribers seem to have been much more inclined to offer a Nature Prescription to women (73%) than to men (25%). There are a number of possible theories and explanations that require further investigation, for example: gender differences in GP consultation rates during the pilot; whether gender plays a role in the types of conditions most likely to be prescribed nature; whether prescribers feel that women would be more receptive to a Nature Prescription; or whether the materials provided, and activities suggested, are perceived as more suited to women than men. Of course, another factor might be that the majority of prescribers were also women.

“Subconsciously, or for whatever reason, all my patients were female between 45 and 61. There’s no reason why it should be the case, or why I didn’t suggest it to more men. I think it’s that women are more open to it, I’m not sure. Also, I think I find it tough selling it to younger people, less than 25. I don’t know why. I’m not saying there’s anything in it, but maybe it’s worth just keeping it in mind.”

GP, Mill Lane Surgery

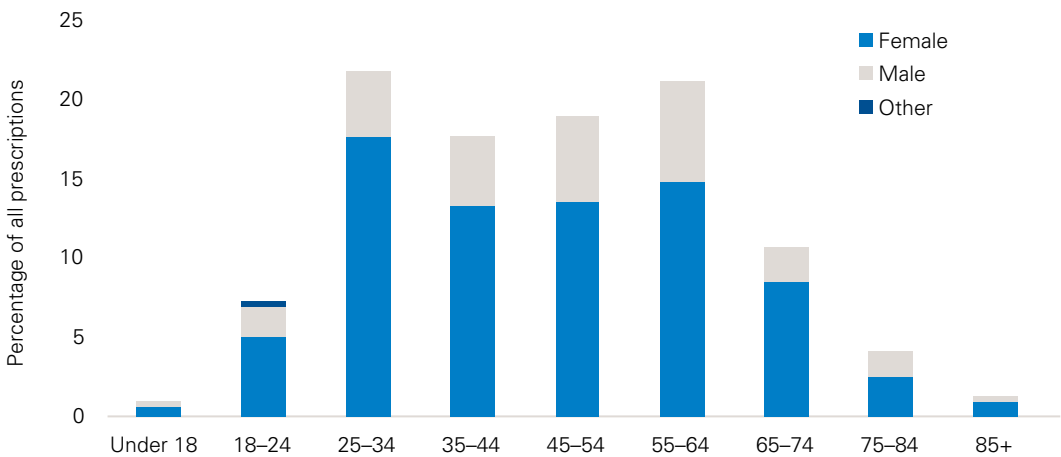


Prescribers have been **more inclined** to offer a Nature Prescription to **women** than men



Harebells at Holyrood Park by Elaine Bradley

Figure 18. Gender and Age Distribution of Patients Prescribed Nature



Further expansion of the pilot would allow for a deeper exploration of any gender bias in both prescriber and patient engagement with Nature Prescriptions and also in the prescribing process itself. Also, the ethnicity of patients and prescribers was not recorded during the pilot, largely due to time constraints and ethical considerations during data collection. It would be valuable to understand any differences in engagement with Nature Prescriptions across ethnic groups to ensure that the materials and prescribing process are inclusive, and reflect the diversity of local communities. This could be further enhanced by including health care professionals, patients and members of the wider community in the future design of materials, and the nature activities offered, to ensure that Nature Prescriptions effectively engages participants from all backgrounds and populations.

“Some people are very disadvantaged in lots of ways, and I wouldn’t want a Nature Prescription to be something I didn’t think about giving to a patient because I thought they might struggle, for example, with some of the language, or say, ‘that’s not for me’.”

GP, St Triduanas Medical Practice

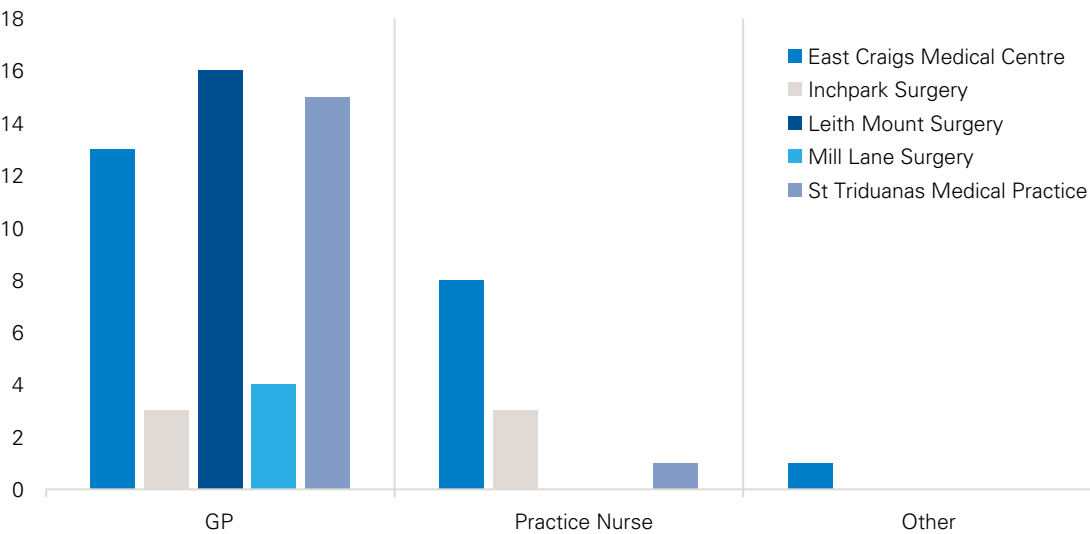


Tree planter by Peter Cairns (rspb-images.com)

5.6 Patient Experience

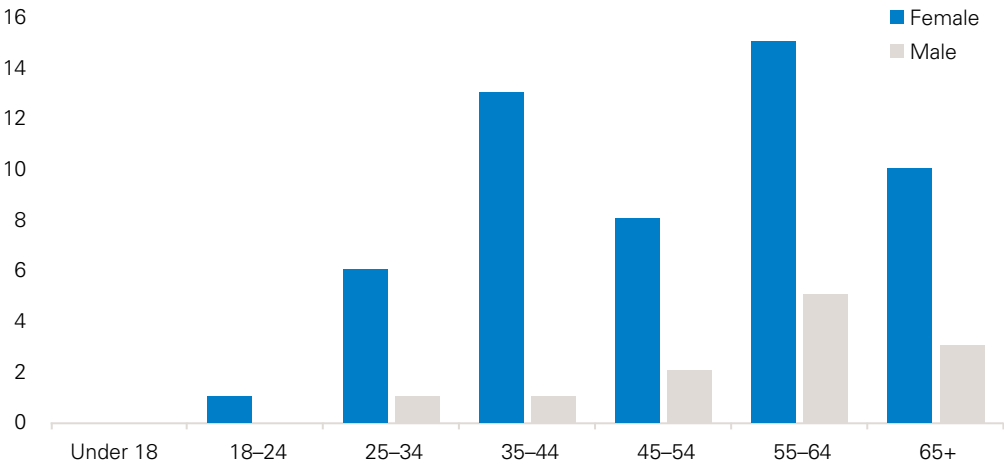
Feedback from patients about their experience of Nature Prescriptions was gained primarily from the post-prescription survey sent by the practices during the trial. In total, 65 patients responded to the survey. The breakdown by practice and prescriber role is presented in Figure 19.

Figure 19. Who gave you the Nature Prescription?



As Figure 20 demonstrates, patient respondents came from a wide range of age groups, and they were predominantly women (82%). The fact that women were the main survey respondents is consistent with their disproportionate representation among those being given a Nature Prescription. The patient’s understanding of the reason they were given a prescription is also consistent with the data recorded: 65% of patients said that their prescription was given to address a mental health condition, 10% to improve a physical health condition and 19% to do both.

Figure 20. Patient Survey Respondents by Age and Gender



Patient Attitudes Towards Nature Prescriptions

Given the importance of patient response to the efficacy of the Nature Prescription project, we were keen to know what they thought about the idea of GPs prescribing nature. One respondent (2%) found it inappropriate, saying:

“it’s a great idea, but passing out a pamphlet does not equal quality mental health treatment and support of a doctor”.

A few patients (11%) were unsure, with one mentioning that, because nature is already available to everyone, it doesn’t really need prescribing. Other reservations included the sense that it was patronising or that it might be used instead of prescription drugs. These insights highlight the importance of communicating the distinctiveness of Nature Prescriptions over other forms of nature engagement and of making it clear that it is a complimentary treatment and remains sensitive to any patient’s particular needs.

The vast majority (87%) of patients felt that GPs *should* be able to prescribe nature for health and gave three main reasons for their support. First, it gave them **permission and motivation** to take time out of their day for some form of engagement with nature. This is valuable in its own right but it also offers a means of resisting, or better balancing, other demands on patients’ time such as work and family commitments. Granting permission, particularly from someone in a position of authority, and providing motivation, seem to work well together in producing health benefits.

“It’s a positive way to feel better. The fact that the doctor prescribed this made me take a walk every day and really feel the benefits.”

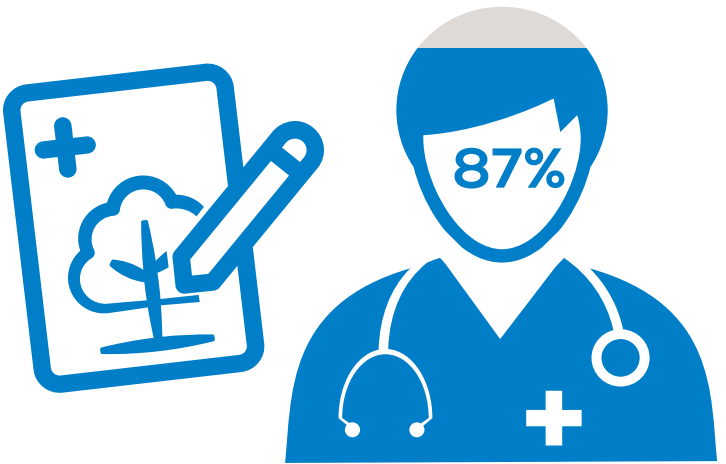
Second, many patients welcomed a **drug-free, safe alternative** to help treat their condition, citing that a Nature Prescription was:

“more healthy than medication”,

“didn’t do any harm”

and promoted

“long-term lifestyle change.”



87% of patients felt that GPs should be able to prescribe nature for health

The third main reason for positive patient responses to a Nature Prescription was that they felt **it worked**. Patients commented on its adaptability to a range of conditions, as well as its potential as both a self-standing and a complementary treatment.

"It got me out of the house even at my worst anxiety."
"It works. It helped me in lockdown."
"It has helped me to get out and enjoy doing something."
"Alongside other treatments like appropriate medication and therapy, a nature prescription is a brilliant concept that can benefit everyone."

Response to Nature Prescription Materials

Just as most patient respondents were positive about GPs offering prescriptions to nature, many of them also expressed appreciation for the RSPB Nature Prescriptions materials.

"I loved the calendar. I've previously done, and in some cases regularly do, many of the seasonal activities listed and they make me feel amazing! I love all the noted activities and will certainly try them out."
"I liked the ideas with specific locations. It encouraged me to go to different places. The leaflet was great, well put together."
"I think the calendars are particularly well put together. They are not patronising which similar things can be. The ideas are varied and specific to the local area. Some involve more effort but some are super easy. Good to have the mix."

Other insights into patient views on the Nature Prescription materials come from their responses to questions about how often they used the Nature Prescription leaflet and calendar. While some used the materials 'often' (14% for the leaflet and 17% for the calendar), most participants indicated that they used these things 'sometimes' (65% for the leaflet and 53% for the calendar). The corresponding figures for patients who 'never' used these materials were 21% (leaflet) and 30% (calendar). When these results are considered in conjunction with anecdotal comments, it seems that patients who were already spending time with nature and/or who were aware of their local surroundings, were less inclined to use the Nature Prescription materials. As one respondent put it:

"... I did this anyway, so it hasn't been helpful to me. I imagine it would be great for others."

This explanation supports the view that the amount of use that patients made of materials is not a reflection of how often they followed their Nature Prescription itself. For others, the materials offered them a way to either initiate, or develop nature engagement and awareness.

"I highly recommend prescribing nature as it gives us more awareness of what is just outside our door."
"While I didn't follow the specific suggestions in the leaflet, it did remind me of the importance of nature to mental health and encouraged me to keep up with the nature activities that I was already doing."

Importantly, most patients (75%) did not experience any difficulties in following their Nature Prescription. For the 17% of people who did encounter problems, the main barriers were finding time to engage with nature, health conditions that made it impossible, and/ or COVID-19 related fears.

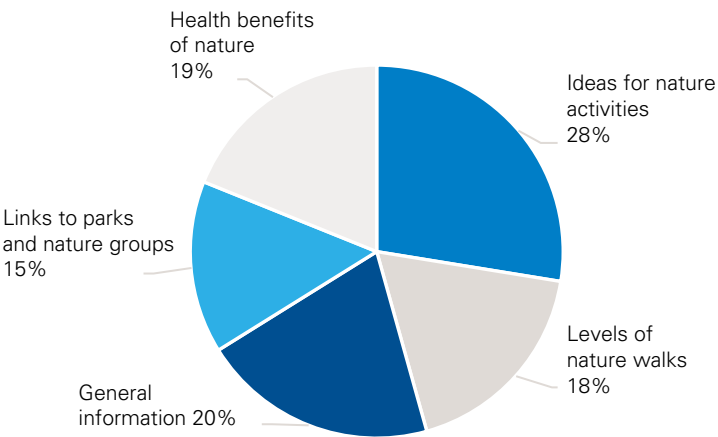
"I think it is a good idea and once COVID is over then I will be more confident about getting out and about."

Overall, it is clear that patients themselves support two of the fundamental tenets of the Nature Prescriptions Project. They agree, overwhelmingly, that it is both appropriate and valuable to have a medical professional prescribe nature and they respond positively to the materials associated with such a prescription.



Most patients did **not experience any difficulties** in following their **Nature Prescription**

Figure 21. Which sections of the leaflet did you find most helpful?



Favourite Nature Activities

The Nature Prescription materials offer suggestions, guidance, points of focus, and encouragement; all of which give structure to the prescription and loosely formalise the activities in ways that make them special, enjoyable and therapeutic. The effectiveness of this approach is evidenced by its appeal to many of the patients who received a prescription, along with their diverse responses to questions about the information that they found most helpful. As Figure 21 indicates, 'ideas for nature activities' were most popular (27%), but nearly as many people (21%) placed almost as much value on the 'general information' provided. Some 19% of patients found information about 'the health benefits of nature' most useful, while a further 18% resonated most with the 'levels of nature walks'. It is interesting to note that 'Links to Parks and Nature Groups' was the least often valued element of the Nature Prescription materials (15%), a result which could reflect the tendency for a prescription to be seen as an individual and more solitary undertaking.

Enjoying nature by Ben Andrew (rspb-images.com)





Walking by Colin Wilkinson (rspb-images.com)

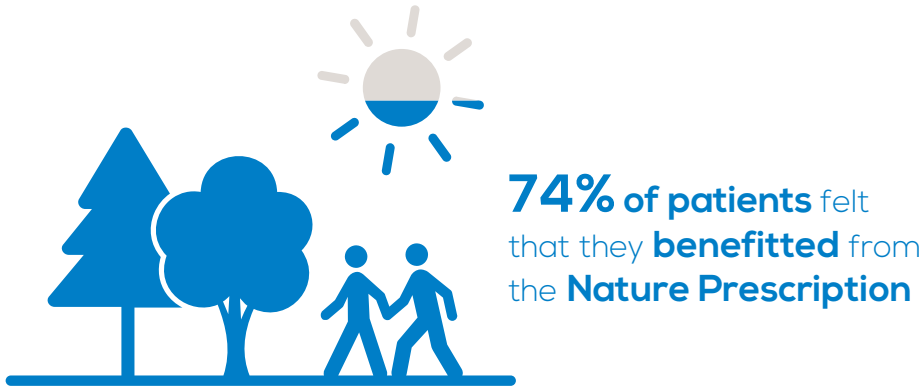
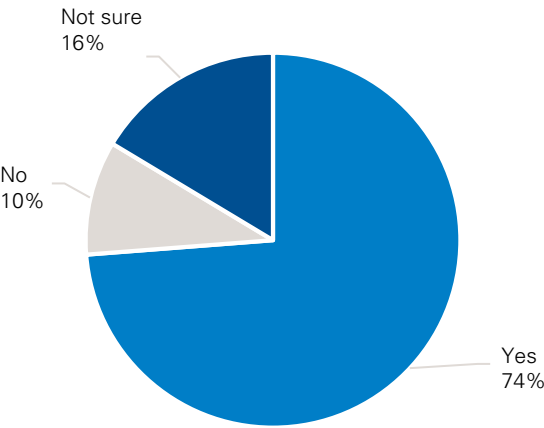
Benefits

Overall, the majority of respondents (74%) felt that they benefitted from the Nature Prescription (see Figure 22). Although 10% of patients felt that it wasn't of benefit to them and a further 16% were unsure, their explanations indicate that this was because they were already very active in nature before receiving a prescription.

“Whilst I personally may not have benefitted, because I am already very aware of the benefit of nature, this is a brilliant initiative which I fully support others to benefit from.”

This suggests that all participants were convinced about the health benefits of being in nature and engaging with it but, because some of them already spend time in nature, they didn't think they needed to have it prescribed. For others, the prescription was crucial and transformative.

Figure 22. Do you feel that the nature prescription has been of benefit to you?



The most popular nature activities included: walking in nature; exploring new places; looking for and learning about flora and fauna; becoming aware of natural surroundings; sensory engagement with nature; and noticing positive emotional responses. For some, **walking in nature** was beneficial because it was a pleasant and readily accessible form of exercise. At the same time, walks became valued because they allowed exploration of new areas and offered opportunities to learn more about the nature within them.

“I'd never been to some of the places before and it was lovely to explore and have a purpose rather than going and feeling awkward with nothing to do on my own.”

“I have lived in Edinburgh for over 10 years but honestly had no idea where to go for woodland walks, so the maps and suggestions were fantastic. It is so easy to forget how good nature makes you feel, especially in winter and throughout the pandemic. Thank you!”

For some, actively looking for particular birds or animals, trees or plants, was the source of greatest pleasure and for others, **simply being** in nature was the best part of following a Nature Prescription.

“Visiting a beach and park and watching the clouds. Listening for birds and spotting an otter.”

“Feeling the wind on my face. Hearing birdsong. Seeing the changes in nature.”

“Connecting with the present moment and creating a sense of calm. I feel better for being outdoors and enjoying what is around me – it's had a positive impact on mood and anxiety/stress and physical health.”

This last quotation highlights the **mindful** dimensions of nature prescriptions: namely, sensory perception; growing awareness; as well as observation and recognition of how these experiences can influence mood. Numerous patients expressed this experience beautifully, as the following quotations demonstrate.

“It has been a saviour. I feel I always need to be productive and I'm being lazy if I'm not active. Yet I was at burnout. Being given “permission” to go out and given a list of possible things to do was amazing. I didn't have to feel self-conscious about going to new places, thinking of places to go or things to do, especially on my own. It has allowed me to listen to my feelings, a greater awareness of how things affect me, and just how much beauty is around us. I have slowed down, and I am so much calmer thanks to this initiative.”

“Mindfulness of nature surrounding me, stillness and observation, planting flowers and shrubs.”

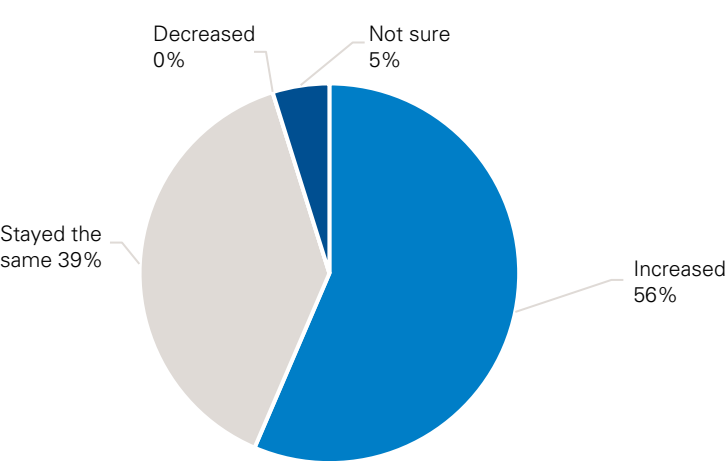
“I have started paying more attention to all the beauty surrounding me, the calming effect it has on me and the fact that nature indeed helps to clear your head and get a calmer perspective on issues bothering you.”

Impact on Relationship with Nature

The experiences of patients who followed a Nature Prescription also provide valuable insights into the impact that this form of intervention can have on participants' overall health and wellbeing, as well as their attitudes toward nature. In theory, increased awareness of nature should inspire stronger connections with it and this, in turn, has the potential to transform behaviour towards nature in ways that help to establish a reciprocal relationship.

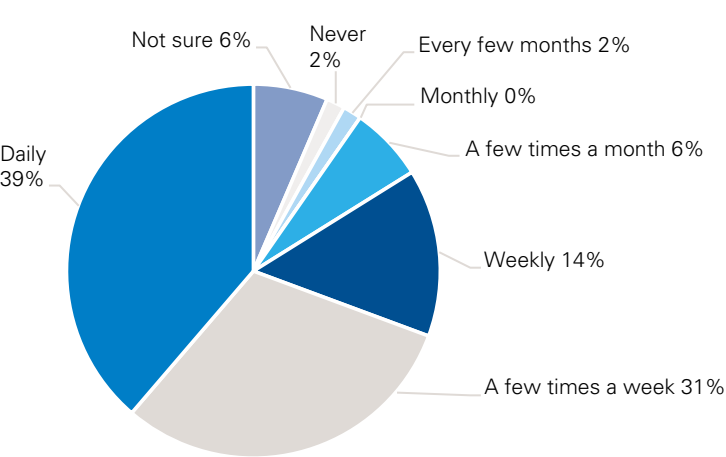
When asked whether their awareness of nature had changed since receiving their prescription, 56% felt that it had increased, while an additional 39% felt that it had stayed the same (see Figure 23). As indicated earlier, anecdotal evidence suggests that this lack of change was because awareness levels were already high. The remaining 5% of participants were unsure.

Figure 23. Since receiving your prescription, do you think your awareness of nature has:



A similar pattern emerges from responses to questions about the impact of the prescription on **connection with nature**, with 56% of patients stating that they connect with nature more often, 41% about the same and 3% unsure. It’s encouraging to discover that 39% of patients report daily connections with nature and nearly as many, 31%, connect with nature a few times a week. A further 14% connect with nature weekly, and 6% manage to do so few times a month (see Figure 24). Only one person indicated that they never connected with nature but they did not provide any explanation of this response. What we can say is that this does not reflect a reduction in the frequency of time spent connecting with nature. This is because no respondent indicated that they spent less time with nature since receiving their prescription. More direct positive impacts are reflected in the fact that 56% reported spending more time in nature, while 41% felt that this had stayed about the same for them.

Figure 24. Since receiving your prescription, how often do you connect with nature?



One respondent nicely sums up the importance of awareness and connection to nature:

“I’ve been reminded of all that nature has to offer. I share my love of nature with friends and I’ve noticed how it has benefitted them as well. This prescription has shone a light on something that brings me a lot of joy and that’s always there no matter what. Being connected with nature calms me and makes me feel grounded. It gives me perspective and lifts my heart. Thank you so much for this inspired service. Absolutely brilliant!”

As this suggests, most patients were clear that their Nature Prescription had increased or maintained their awareness of nature and their connection to it, but it seems that they were less convinced about the impact of a Nature Prescription on their **behaviour towards nature**. While 28% indicated that they were unsure about this, some 32% felt that following the prescription had not led to changes in their behaviour towards nature. Unfortunately, only one of these respondents offered any explanation for their reply to this question and, as in other contexts discussed above, it seems that it has much more to do with pre-existing engagement with nature, than anything related to the Nature Prescription per se. The remaining 40% of people who felt that their experiences of Nature Prescriptions had changed their behaviour toward nature commented on an increase in their awareness and of being more observant and appreciative of nature.

“I am now much more likely to be physically active and engage with the outside world when I’m feeling low. I’ve been keeping a journal of bird sightings since the start and this gives me both something to look forward to and something to look back on and remind me of the small things that make me feel happier.”

“I’m much more observant and give myself time to really look and listen now.”

“I have realised that looking at green spaces, trees etc. makes me feel calmer. I have increased my collection of houseplants which gives me a sense of calm in the home. I appreciate my GP sending me nature prescriptions. She listened to my needs and acted appropriately without the need for medication.”

“I’m sure I’ve become more caring and responsive to what nature has to offer.”

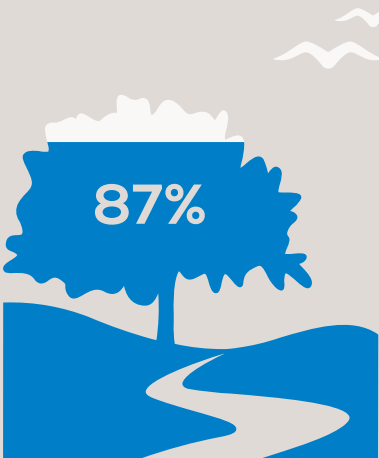
For some, these experiences inspired direct action to help protect nature.

“I have volunteered to help at COP26. I plan to buy a litter picker.”

“I now volunteer in a garden once a week.”

Perhaps the ultimate indication of the success of the Nature Prescriptions pilot is that the vast majority of patients consider it very likely (41%), or likely (46%) that they will continue with Nature Prescriptions or similar nature activities. It is difficult to imagine a more convincing indication of the value of this form of medical intervention: experiences of Nature Prescriptions and their positive impact on health and wellbeing become part of the motivation for continuing to engage with nature. As one final quotation makes clear, the result can be nothing short of allowing people to wake up to the wonders that nature has to offer.

“Thank you to whoever thought this up. It has opened up a new world for me.”



87% of patients considered it **very likely** or **likely** that they will **continue with Nature Prescriptions** or similar nature activities

5.7 Prescription Process – Barriers and Enablers

Barriers to Prescribing

Post-pilot interviews identified both supports and challenges when prescribing nature to patients. Clearly, understanding the reluctance of people to offer Nature Prescriptions and the potential barriers to prescribing is crucial for any potential wider roll out of the project. As outlined earlier, COVID-19 restrictions brought significant challenges and pressures during the pilot. In terms of the prescribing process, the most significant barrier cited was the **reduction in the number of face-to-face consultations** which made it difficult for some GPs to share the materials and effectively engage patients with the potential benefits of connecting with nature.

“If I was talking to you in the surgery, I would look at your body language and I’d say something and think ‘maybe this isn’t the time to have that conversation’, or ‘actually maybe we will, this is the right time’. So, we lose some of those cues that we would use to gauge whether or not an intervention would be suitable, but that’s the art of the consultation.”

GP, St Triduanas Medical Practice

Time pressure during consultations was also frequently mentioned as a key reason for not prescribing, or forgetting to prescribe:

“With all the prescriptions it’s just sort of thinking of it, and as we’ve got busier now it’s less likely if I’m really honest.”

GP, Inchpark Surgery

“It takes time to introduce something completely new like that. What doesn’t take time, or much time at all, is prescribing tablets. It takes a lot more time to do the positive intervention.”

GP, Inchpark Surgery

“I just kept sort of either forgetting or not thinking of suitable people or sometimes just too busy and not having the time to get into it. That is the big problem. I find that it takes time to really sell this and talk about how good it is and how you work it and how I would expect it to help them. Often I find it a struggle to finish the calls as it is, so there’s a barrier even getting into these conversations. Another barrier is that people often feel fobbed off, I think, as soon as you mention it, unfortunately.”

GP, Mill Lane Surgery

“The only negative is that our appointments are incredibly short on time and it is extremely difficult to discuss this too. But I feel it is vital for it to be considered/included.”

Practice Nurse, Inchpark Surgery

In other cases, **temporary tenure** in the practice was a factor as was **misunderstanding about the process and/or resources** available. Importantly, **patient response** also played a role: if the patient didn’t follow the prescription, those prescribing could become disheartened and stop doing so.

“It’s reading your patient. You know, you’re not going to hammer things into them if they’re not ready for it. You just get that feeling when you’re chatting to them that it’s maybe not somewhere you want to go. So, I will cut it down quite quickly at that point and probably not explore it with them as much as I would with other patients.”

GP, East Craigs Medical Centre

“There’s a bit of, I suppose, people saying, ‘how is this relevant for me? Or ‘is this you fobbing me off with something? I think that’s a barrier for some people to prescribe, particularly maybe less experienced Doctors. Maybe they haven’t established a relationship with the patient. But in the same way, one of the younger doctors who’s moved on, he was one of our most enthusiastic prescribers, totally bought into it. And you know I can imagine this being part of how he thinks and works for the rest of his career.”

GP, St Triduanas Medical Practice

Arthur’s Seat Edinburgh by Ed Marshall (rsdp-images.com)



Lack of patient engagement due to complex health conditions, low motivation, previous experiences of nature and/or the need for additional support also influenced prescribing.

“Some people go, ‘you know, that sounds really good’. Other people go, ‘oh no, I do these things anyway, or ‘no, that’s just not for me.’ So, the people that end up doing it are those who feel that they need a bit of structure and who aren’t adverse to the idea of going out into nature.”

GP, St Triduanas Medical Practice

“Obviously not everybody can get out and about and we really need somebody to help them. If they’ve got pretty severe anxiety or they’ve got aches and pains that prevent them from going out, these would be the only barriers. If anybody couldn’t access it, it would have been because of that, and also people who didn’t really realise the value. And so maybe somebody motivating them initially until they realize how valuable it was, how beneficial it was, someone to start it off.”

GP, East Craigs Medical Centre

“I think it’s a valuable resource for us to have. I think we just have to be a bit realistic. Some of the people who get referred just really aren’t in a place to take this on. Not that it wouldn’t be beneficial to them, because it definitely would. So, you know, it’s probably 40% I’d say would be the potential for the referral and not always necessarily taking it on, but we would be willing to mention it to them.”

Link worker

“It would be lovely to have a companion occasionally to go out walking and enjoy nature and conversation. It certainly would make a great difference to me.”

Patient

Some of the GPs who introduced the pilot to the practice commented on the difficulty in **keeping fellow prescribers’ motivated**.

“For me it’s been trying to get people in the wider practice in, as in the professionals, to get them to do it. I think some people have been really caught up and busy in the pandemic, so it’s been trying to say that it would actually help with your management. It picked up later on as we were going on with it, but in the initial engagement, trying to get them motivated was more challenging. But in terms of patients, for me it’s not really been a problem.”

GP, East Craigs Medical Centre

Finally, **lack of patient feedback** about the prescription can make it difficult to gather evidence of its effectiveness, something which can also influence prescriber motivation and enthusiasm for prescribing.

“I used it once and wasn’t sure if it had any impact. I don’t know if patients find it useful.”

GP, St Triduanas Medical Practice

“It’s been quite hard to get their follow up and especially the way our practice works – there’s no set GP, so they can phone up anybody afterwards.”

GP, East Craigs Medical Centre

“We’ve just not been seeing patients as much as we would have done otherwise and, also, there is an issue with continuity of care, so I might treat a patient for depression and then the next time they speak to someone else you know, because we are a big practice. And I haven’t actively been asking them what they thought is the other problem and I think that’s partly to do with time.”

GP, Leith Mount Surgery

“I think as the evidence gathers about the benefits to health then it will make the conversations easier.”

GP, St Triduanas Medical Practice



Frost by Andy Hay (rspb-images.com)

Enablers to Prescribing Nature

Alongside these challenges, there were also factors that both enabled and encouraged prescribers to suggest a Nature Prescription. Some of the prescribers commented on how much they enjoyed the prescribing process and how **positive engagements with patients** helped with momentum.

“When you get somebody on board with it, it’s just lovely.”

GP, East Craigs Medical Centre

“It’s amazing how people are quite positive about it and you could have it as an adjunct to the prescription or to other techniques that we use.”

GP, Inchpark Surgery

“It’s a lovely thing, a really lovely thing.”

GP, Leith Mount Surgery

“It’s almost universally, positive! People were very interested to hear about something a little bit different that wasn’t either medication or talking based, or something they hadn’t experienced before.”

GP, St Triduanas Medical Practice

One GP recounted a particularly positive experience with a patient:

“I had a woman whose family are all abroad and so she’s feeling quite isolated. And we just took the time to go through the calendar, because Scotland is a new place to her and so we were talking about some of the things to look at, some of the birds to look at and things that she didn’t recognise. You know, I’ll go outside and go ‘look, there’s a blue tit that’s wonderful’, but to her it was completely new, even the sounds. So we had a really massive conversation about looking for birds, looking for plants, we talked about lichen, all these little things and she really engaged with me. And that had been quite a difficult consultation because she was feeling so homesick and so lost and not able to meet anybody because of lock down and she really engaged and that’s really helped my relationship with her. There’s a great amount of trust between us and she’s found it really helpful, and now that she’s going out, she’s joined a mummy and baby group where they just walk together. And that, you know, is worth its weight in gold to make me feel that maybe I can do something. So that’s been wonderful.”

GP, East Craigs Medical Centre

The enthusiasm and ongoing **support of colleagues** also helped.

“Dr * who led this was brilliant. She kept us all very informed and she was very much on top of it. I definitely have to say that without her we would probably not be so enthusiastic about it, it would be something that we may have dipped into and then kind of forgotten about, but she kept the momentum going.”

GP, East Craigs Medical Centre

Several prescribers commented on the **simplicity of the process**, the importance of having **quality materials**, and also having materials ready to send to patients when needed. In addition, having the resources available on practice websites made it easier to share materials with patients remotely during, and after, consultation. Many prescribers and patients, particularly those who couldn’t access materials via websites, felt that having a single online ‘hub’ of Nature Prescription resources would further enhance the prescribing process and potentially increase engagement, offering a space to share experiences and success stories as well as providing an additional source of ideas for connecting with nature.

“You’ve produced a very beautiful visual document and I think that’s part of it. I find this a delightful inspiring resource.”

GP, Mill Lane Surgery

“I found it very straightforward. I think the calendar has been excellent, the booklets excellent, and the way we record it.”

GP, East Craigs Medical Centre

“The packs were sitting there ready, and I just needed to put a label on it, so that was easy and we also had it on our website for patients to look at. So having high quality resources in place and being familiar with it was good for me.”

GP, St Triduana Medical Practice

As mentioned earlier, most of the patients felt that the **role and authority of the prescriber** significantly influenced the level of engagement. Similarly, many of the prescribers commented on the importance of nature being prescribed by a GP/Health Care Professional.

“I think it’s a lovely thing that everybody could talk about, but I do think it’s a very powerful thing coming from either a GP or an ANP. It’s something that we’re actually prescribing and something that we feel has got real benefits and has a big impact for patients, and so I do think actually it is quite important that it comes from us and it’s not just leaflets and something online.”

GP, East Craigs Medical Practice

Other prescribers commented on the benefits of **having Nature Prescriptions available in the wider community**, as well as being formally prescribed at the practice.

“One lady said to me that I had allowed her to have time away from her desk and have some time for herself in a working day. But for a lot of people they’ll be able to access it themselves, they won’t need that same, being allowed.”

GP, St Triduana Medical Practice

“If I’m having a consultation anyway, that’s a tool that I can use, absolutely. I think generally at a population level it would be much better if people were aware of these things and able to access these things, and it was more culturally appropriate, but it is a useful tool to have in our prescribing box.”

GP, Inchpark Surgery

5.8 Post-pilot: Experiences and Future Intentions

It is both gratifying and encouraging to find that engagement with the pilot, and the experiences of formally prescribing nature, had a very positive impact on perceptions of the usefulness of this initiative in general, and of the RSPB materials in particular. Figure 25 demonstrates that, when asked, post-pilot, if they were currently prescribing nature activities to their patients, the number of affirmative responses had more than doubled from pre-pilot levels: 89% of all participants were now prescribing nature. Among women, 90% were offering Nature Prescriptions, while the corresponding figure for men was 79%. The reasons for (still) not prescribing included: not having the time due to demands of the pandemic, not knowing enough about nature prescribing, and retirement.

A similar pattern emerges in response to the question of “whether they were likely to use Nature Prescriptions later this year” (see Figure 26). In this case, the positive response rate for women increased to 94% while that of men rose to 86%. It is unclear why there is an anticipated rise in support for Nature Prescriptions, especially among male prescribers, but anecdotal evidence suggests that the decline in COVID-19 related constraints plays an important role. In other words, they expect it to get easier to prescribe nature to their patients. Taken together, these results reveal an overwhelmingly positive response to the Nature Prescriptions project and growing support for actively providing formal Nature Prescriptions.

“It is sad to hear that the pilot will be coming to an end, but hopefully it will prove to be something which will become part of our normal practice.”

GP, Inchpark Surgery

“What I find with change like this in any practice, is that you’ll always have the early adopters, the enthusiasts and those that will join. What the goal is for me is that it becomes part of our normal practice. That’s what I would love to see. That would be my dream.”

GP, St Triduana Medical Practice

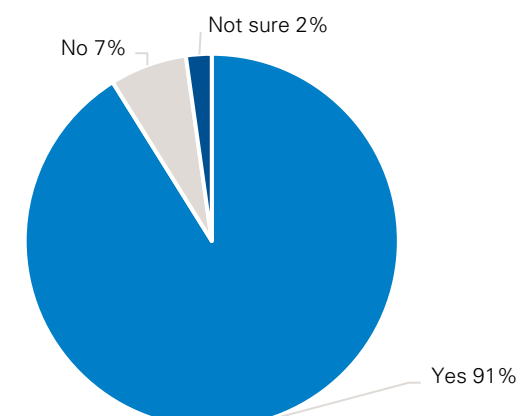
Pre-pilot, just **39%**, of prescribers were recommending nature-based activities.



By the end of the pilot, **89%** were actively prescribing nature with **91%** likely to use Nature Prescriptions over the coming year.



Figure 26. Are you likely to use Nature Prescriptions later this year?





Swans St Margaret's Loch (Stalactite Photography)

Prescriber Nature Connection

Finally, one of the aims of the pilot was to determine whether nature prescribing influenced the prescriber's own connection to nature. Of those prescribers who completed pre- and post-pilot questionnaires, the results showed only a slight decline in average Nature Relatedness scores over the winter months (NR-6 = 4.17 pre, to 4.16 post-pilot). These results appear even more significant when compared with average Nature Relatedness scores in Scotland, which declined more severely over the duration of the pilot (from NR-6 = 3.61 to NR-6 = 3.50)⁽⁵⁰⁾. It's also worth noting that there was a marked difference in the post-pilot scores of prescribers (NR-6 = 4.15) compared to non-prescribers (NR-6 = 3.28).

Anecdotal feedback from interviews provides further insights. When prescribers were asked if being involved in the pilot had influenced their own engagement with nature, the majority felt that their awareness of nature had increased. Some also stated that they were now spending more time in nature and exploring the local area, as well as noticing the health benefits of nature connection for themselves and family members.

"I know a lot more about what is going on around the surgery area. It has made me stop and think a little bit more about what's important and what's going on, which is good. I open water swim now at least once or twice a week. I don't know whether that would have happened without being involved in the project."

GP, St Triduana's Medical Practice

"We're actually really well placed at the practice for lots of green spaces and I'm exploring that more myself."

GP, Inchpark Surgery

"I'm more aware of nature as well now, it's more about connecting with nature rather than just going out for a walk and being lost in your own thoughts. And that's been really, really helpful."

GP, East Craigs Medical Centre

"We have a young daughter and as a family we've been going out a bit more and using some of these suggestions. We're often prescribing and suggesting to others but we don't use it ourselves. So it's maybe helped us to try that, and we've been going out for walks, paying more attention to our surroundings and seeing the benefits."

Community Psychiatric Nurse

"I haven't set out to do these things myself, but it's just a reminder of how important these things are and appreciating small things in nature and taking time. I've probably done a few more walks without my headphones after thinking about this."

GP, Mill Lane Surgery

"After COVID started I was feeling a bit unsure about things and a bit blue and looking around at nature and taking my mind off things felt good and it was only because I was doing this that I started looking at things with different eyes. I thought, actually this is beneficial and I love trees for example, so looking at trees really relaxed me and took my mind off the stress. I would have never thought about things like that before."

ANP, East Craigs Medical Centre

Overall, these results demonstrate a strong relationship between prescribers' perceived nature relatedness and their engagement with Nature Prescriptions, as well as highlighting the positive influence of prescribing on connections with nature and, subsequently, wellbeing. It would be advantageous to explore these relationships further by monitoring nature relatedness over a longer time period, as well as exploring any long-term, sustained effects.

6 Conclusions and Recommendations

Nature Prescriptions is an effective, low-cost health intervention that has no negative side-effects, is able to support a range of physical and mental health conditions and is entirely complimentary to traditional medicative treatments as well as social prescribing approaches. Data collection and feedback from prescribers and patients demonstrates considerable support for Nature Prescriptions, as both a therapeutic and preventative aid to health.

The uptake and delivery of Nature Prescriptions is influenced by the prescriber's own relationship with nature, personal experience and/or knowledge of the benefits of nature for health, positive feedback from patients, as well as peer support and acceptance of the value of nature as a support for wellbeing. Having quality materials that appeal to both prescribers and patients, along with a simple prescribing process, is also critical to the success of the initiative.

The way patients connect with nature, and the types of activities pursued, varies between individuals and is dependent on health condition, levels of confidence and motivation, familiarity with nature and opportunities to engage. Health professionals can play a significant role in helping patients experience the benefits of nature by engaging in meaningful conversations to identify the forms of nature connection most suited to the individual patient and also by providing the authority and encouragement needed to engage.

Further support for patients with specific needs can be provided by linking their prescriptions to local green health activities and providers, either directly or through community link workers (where available). Ongoing assessment of the suitability, safety and sustainability of such activities is important, as is the capacity of those referring patients to them to have access to relevant local information and knowledge of the ways in which nature can help wellbeing.

The pervasive health challenges associated with the COVID-19 pandemic mean that there's never been a better time to connect people with nature to support wellbeing. Our vision is to build on the success of the Edinburgh Pilot and to expand Nature Prescriptions into GP Practices and communities across Scotland, and in doing so, enhance reciprocal relationships with local nature and bring the associated health benefits to those who need them most.

"The COVID-19 pandemic has highlighted the need for change. We should not only be dealing with the consequences of the pandemic; we also need to broaden our focus to confront other urgent issues, such as the climate crisis. As we remobilise services, we need to consider how we can build towards a greener society and a more sustainable healthcare system." ⁽⁵¹⁾

Dr Gregor Smith, Chief Medical Officer for Scotland

Hedgehog by Kevin Sawford (rspb-images.com)

Extending Nature Prescriptions and ensuring that nature prescribing becomes an accepted and valued component of healthcare provision will require further collaborations with key stakeholders, long-term funding for effective and sustained roll-out and ongoing evaluation of outcomes. Our recommendations are:

Expansion

As a first step, the Edinburgh Pilot should be rolled out to other GP practices across the city to allow for continued assessment and evaluation of its efficacy, with a view to extending into other locations – both urban and rural. Further expansion should be undertaken in partnership with relevant health bodies and complement other green health initiatives.

Support

A central resource for Nature Prescriptions should be created so that all GPs and associated practice professionals have access to the tools, training and support needed to prescribe nature. A single online 'hub' of Nature Prescription resources would further enhance the prescribing process and potentially increase engagement, offering a space to share experiences and success stories, offer links to local green health providers and community programs, as well as providing an additional source of ideas for connecting with nature.

CoDesign

Health care professionals, patients and members of the wider community should be included in the future design of materials, and the nature activities offered, to ensure that Nature Prescriptions effectively engages participants from all backgrounds and populations. Geographically specific nature activities will be integral to the customised Nature Prescription approach for each GP practice, taking into account seasonality, access to greenspace and with a focus on nearby nature.

Inclusivity

A deeper exploration of any gender bias in both prescriber and patient engagement with Nature Prescriptions and also in the prescribing process itself should be undertaken. Understanding any differences in engagement across groups with specific characteristics and needs will help to ensure that the materials, and prescribing process, are inclusive before and during expansion.

Benefits for Health Professionals

There is a strong relationship between prescribers' perceived nature relatedness and their engagement with Nature Prescriptions. Similarly, the act of prescribing nature has been shown to have a positive influence on the prescriber's own wellbeing. It would be advantageous to explore these relationships further by monitoring prescriber nature relatedness over a longer time period, as well as exploring any sustained effects. Offering additional opportunities for healthcare staff to engage with nature and experience the benefits will also increase the likelihood of prescribing nature to patients.

Monitoring & Evaluation

Continued evaluation of the experiences of patients who followed a Nature Prescription can provide valuable insights into the impact that this form of intervention can have on participant's overall health and wellbeing, as well as its capacity to transform behaviour towards nature in the long-term.

"In recovering from COVID-19 we need nature to take care of us, just as much as we need to take care of nature." ⁽⁵²⁾

Dr Tedros Adhanom Ghebreyesus, Director-General, World Health Organisation

In an ideal world, green infrastructure would be a priority in our cities, nature would be thriving on our doorsteps and, as a society, we would recognise, value and embrace the direct and indirect health benefits of nature. In such a world there would be no need to formally prescribe nature as a health intervention (or, indeed, to continually strive to protect it). Our current reality is quite different. We now face a nature and climate emergency which has exposed growing disconnection with nature and the COVID-19 pandemic has further highlighted inequalities in access to nature and its associated benefits to physical, emotional and social wellbeing. As this report has shown, Nature Prescriptions can play an important role in moving beyond these challenges and towards a more ideal world. By encouraging everyday engagements with nature, Nature Prescriptions improves health while cultivating the awareness, appreciation and behaviours needed to support nature's recovery and to enable people and nature to thrive together.

7 References

1. Lovell R, Depledge M, Maxwell S. (2018) Health and the natural environment: A review of evidence, policy, practice and opportunities for the future. European Centre for Environment & Human Health. (Defra Project Code BE0109). University of Exeter Medical School. https://beyondgreenspace.files.wordpress.com/2018/09/health-and-the-natural-environment_full-report.pdf
2. Twohig-Bennett C, Jones, A. (2018) The health benefits of the great outdoors: A systematic review and meta-analysis of greenspace exposure and health outcomes. Environmental Research. 166: 628-637. <https://www.sciencedirect.com/science/article/pii/S0013935118303323?via%3Dihub#bib36>
3. Capaldi C A, Dopka R L, Zelenski J M. (2014) The relationship between nature connectedness and happiness: a meta-analysis. Frontiers in Psychology, 5 (976). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4157607/>
4. Pritchard A, Richardson M, Sheffield D, McEwan K. (2020) The relationship between nature connectedness and eudaimonic wellbeing: a meta-analysis. Journal of Happiness Studies, 21: 1145-1167. <https://link.springer.com/article/10.1007/s10902-019-00118-6>
5. Pretty J M, Griffin M. Sellens M and Pretty C. (2003) Green Exercise: Complementary roles of nature, exercise and diet in physical and emotional wellbeing and implications for public health policy. CES Occasional Paper 2003–1. University of Essex. https://www.researchgate.net/publication/279545095_Green_exercise_The_benefits_of_activities_in_green_places
6. Pretty J, Peacock J, Sellens M, Griffin, M. (2005) The mental and physical health outcomes of green exercise. International Journal of Environmental Health Research, 15: 3190337. <https://pubmed.ncbi.nlm.nih.gov/16416750/>
7. Barton J, Pretty J. (2010) What is the best dose of nature and green exercise for improving mental health? A multi-study analysis. Environmental Science and Technology, 44: 3947-3955. <https://pubmed.ncbi.nlm.nih.gov/20337470/>
8. Thompson Coon J, Boddy K, Stein K, Whear R, Barton J, Depledge M H. (2011) Does participating in physical activity in outdoor natural environments have a greater effect on physical and mental wellbeing than physical activity indoors? A systematic review. Environmental Science and Technology, 45 (5): 1761-1772. <https://pubmed.ncbi.nlm.nih.gov/21291246/>
9. Berman M G, Jonides J, Kaplan S. The cognitive benefits of interacting with nature. Psychol. Sci. 2008; 19: 1207 – 1212. <https://pubmed.ncbi.nlm.nih.gov/19121124/>
10. Jo H, Song C, Miyazaki Y. (2019) Psychological Benefits of Viewing Nature: A Systematic Review of Indoor Experiments. International Journal of Environmental Research and Public Health, 16 (23): 4739. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6926748/>
11. Van Hedger S C, Nusbaum H C, Clohisey L, Jaeggi S M, Buschkuhl M, Berman M G. (2019) Of cricket chirps and car horns: The effect of nature sounds on cognitive performance. Psychonomic Bulletin & Review, 26: 522-530. <https://link.springer.com/article/10.3758/s13423-018-1539-1>
12. Hughes J, Richardson M, Lumber R. (2018) Evaluating connection to nature and the relationship with conservation behavior in children. Journal for Nature Conservation, 45: 11-19. <http://www.owleducation.org/wp-content/uploads/2019/06/Hughes-et-al-2018-Evaluating-connection-to-nature.pdf>
13. Hughes J, Rogerson M, Barton J, Bragg R. (2019) Age and connection to nature: When is engagement critical? Frontiers in Ecology and the Environment, 17(5): 265-269. http://repository.essex.ac.uk/23602/52/Rogerson_ms1%20-%20for%20author_edited%20-%20with%20copyright%20statement.pdf
14. Mackay C M L, Schmitt M.T. (2019) Do people who feel connected to nature do more to protect it? A meta-analysis. Journal of Environmental Psychology, 65: 101323 <https://www.sciencedirect.com/science/article/abs/pii/S0272494418308557?via%3Dihub>
15. Frantz C M, Mayer F S. (2014) The importance of connection to nature in assessing environmental education programs. Studies in Educational Evaluation, 41: 85-89. <https://www.sciencedirect.com/science/article/abs/pii/S0191491X13000436>
16. Martin L, White M P, Hunt A, Richardson M, Pahl S, Burt J. (2020) Nature contact, nature connectedness and associations with health, wellbeing and pro-environmental behaviours. Journal of Environmental Psychology, 101389. <https://www.sciencedirect.com/science/article/abs/pii/S0272494419301185>
17. Richardson M, Passmore H A, Barbett L, Lumber R, Thomas R, Hunt A. (2020) The green care code: how nature connectedness and simple activities help explain pro-nature conservation behaviours. People and Nature, 2: 821-839. <https://besjournals.onlinelibrary.wiley.com/doi/full/10.1002/pan3.10117>
18. Hanson S, Jones A. (2015) Is there evidence that walking groups have mental health benefits? A systematic review and meta-analysis. British Journal of Sports Medicine, 49 (11): 710-715. <https://pubmed.ncbi.nlm.nih.gov/25601182/>
19. Mass J, van Dillen S M E, Verheij R A, Groenewegen P P. (2009) Social contacts as a possible mechanism behind the relation between green space and health. Health Place, 15: 586-595. <https://www.sciencedirect.com/science/article/abs/pii/S1353829208001172>
20. V, Bamkole O. (2019) The relationship between Social Cohesion and Urban Green Space: An Avenue for Health Promotion. International J Environ Res Public Health. <https://www.mdpi.com/1660-4601/16/3/452/htm>
21. O'Brien L, Townsend M, Ebdon M. (2010) 'Doing something positive': Volunteers' experiences of the wellbeing benefits derived from practical conservation activities in nature. Voluntas: International Journal of Voluntary and Nonprofit Organizations, 21(4): 525-545. https://www.researchgate.net/publication/226935578_%27Doing_Something_Positive%27_Volunteers%27_Experiences_of_the_Well-Being_Benefits_Derived_from_Practical_Conservation_Activities_in_Nature
22. Bird W. (2007) Natural Thinking. Investigating the links between the Natural Environment, Biodiversity and Mental Health. RSPB. http://www2.rspb.org.uk/images/naturalthinking_tcm9-161856.pdf
23. NatureScot 2020. Our Natural Health Service: <http://www.naturalhealthservice.scot>
24. Edinburgh and Lothians Health Foundation: (2019) Greenspace and Health; Strategic Framework for Edinburgh and Lothians
25. Scottish Environment Link: www.scotlink.org/most-people-living-in-scotland-want-a-green-recovery-from-the-covid-19-pandemic/
26. Richardson M, Hamlin I. (2021) Nature engagement for human and nature's wellbeing during the Corona pandemic. Journal of Public Mental Health, 20 (2), 83-93. <https://doi.org/10.1108/JPMH-02-2021-0016>
27. Nature Scot survey of Scottish population: Enjoying the Outdoors – Monitoring the impact of coronavirus and social distancing – recreating study. <https://www.nature.scot/outdoors-and-nature-engagement-sustained-post-lockdown>
28. Olsen J, Mitchell R. (2020) Change in use of green and open space following COVID-19 lockdown 'stay at home' phase and initial easing of lockdown. S&SR Environment and Spaces Group, Places & Health Programme, University of Glasgow. www.gla.ac.uk/media/Media_757600_smxx.pdf
29. The Ramblers Association Report (2020) 'The grass isn't greener for everyone. Why access to green space matters.' <https://www.ramblers.org.uk/news/latest-news/2020/september/the-grass-isnt-greener-for-everyone.aspx>
30. Mind. (2020) The mental health emergency: how has the coronavirus pandemic impacted our mental health? https://www.mind.org.uk/media-a/5929/the-mental-health-emergency_a4_final.pdf
31. SAMH (2020) Impact of the Pandemic on Mental Health Services in Scotland. <https://www.samh.org.uk/about-us/news-and-blogs/coronavirus-research>
32. Shetland Nature Prescriptions Calendar: https://www.healthshetland.com/site/assets/files/1178/730-1309-17-18_nature_prescriptions_calendar_4sep.pdf
33. White M P, Alcock I, Grellier J. et al. (2019) Spending at least 120 minutes a week in nature is associated with good health and wellbeing. Scientific Reports 9: 7730. <https://doi.org/10.1038/s41598-019-44097-3>
34. Capaldi C A, Passmore H A, Nisbet E K, Zelenski J M, Dopko R L. (2015) Flourishing in nature: A review of the benefits of connecting with nature and its application as a wellbeing intervention. International Journal of Wellbeing, 5(4) <https://www.internationaljournalofwellbeing.org/index.php/ijow/article/view/449/509>
35. Bratman G N, Hamilton J P, Hahn K S, Daily G C, Gross J J. (2015) Nature experience reduces rumination and subgenual prefrontal cortex activation. Proc Natl Acad Sci 112 (28): 8567-8572. <https://www.pnas.org/content/112/28/8567>
36. Sturm V E, Datta S, Roy A R K, Sible I J, Kosik E L, Veziris C R, Chow T E, Morris N A, Neuhaus J, Kramer J H, Miller B L, Holley S R, Keltner D. (2020) Big smile, small self: Awe walks promote prosocial positive emotions in older adults. Emotion, 10. <https://psycnet.apa.org/record/2020-69974-001?doi=1>
37. Richardson M, Sheffield D. (2017) Three good things in nature: noticing nearby nature brings sustained increases in connection with nature. Psyecology, 8(1): 1-32. <https://core.ac.uk/download/pdf/46171384.pdf>
38. McEwan K, Richardson M, Sheffield D, Ferguson F J, Brindle, P. (2019). A Smartphone App for Improving Mental Health through Connecting with Urban Nature. International journal of environmental research and public health, 16(18): 3373. https://www.researchgate.net/publication/335781653_A_Smartphone_App_for_Improving_Mental_Health_through_Connecting_with_Urban_Nature
39. Rogerson M, Barton J, Bragg R, Pretty J. (2017) A scientific evaluation of the health and wellbeing impacts of the Wildlife Trusts volunteering programmes: The health and wellbeing of volunteering with The Wildlife Trusts. University of Essex. https://www.wildlifetrusts.org/sites/default/files/2018-05/r3_the_health_and_wellbeing_impacts_of_volunteering_with_the_wildlife_trusts_-_university_of_essex_report_3_0.pdf
40. Lumber R, Richardson M, Sheffield D. (2017) Beyond knowing nature: contact, emotion, compassion, meaning, and beauty are pathways to nature connection. PLOS One, 12: e0177189 <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0177186>
41. The University of Derby and the National Trust, Noticing Nature Report. (2020) The University of Derby Nature Connectedness Research Group: <https://www.derby.ac.uk/media/derbyacuk/assets/departments/press/images/2019/014a-Noticing-Nature-Report-FINAL.pdf>
42. Kabat-Zinn J. (1990) Full catastrophe living: using the wisdom of your body and mind to face stress, pain and illness. New York: Delacorte
43. Nisbet E K, Zelenski J M, Grandpierre, Z. (2019) Mindfulness in Nature Enhances Connectedness and Mood. Ecopsychology, Vol. 11 (2). <https://www.liebertpub.com/doi/10.1089/eco.2018.0061>
44. Keng S-L, Smoski M, Robins C J. (2011) Effects of mindfulness on psychological health: A review of empirical studies. Clinical Psychology Review 31, (6): 1041-1056. <https://www.sciencedirect.com/science/article/abs/pii/S027273581100081X?via%3Dihub>
45. QuietRoutes – Edinburgh's walking and cycling routes and interactive map. The City of Edinburgh Council. <https://www.edinburgh.gov.uk/cycling-walking/explore-quietroutes/1>
46. Nisbet E K, Zelenski J M. (2013) The NR-6: a new brief measure of nature relatedness. Frontiers in Psychology, 4: 813. <https://www.frontiersin.org/articles/10.3389/fpsyg.2013.00813/full>
47. Public Health Scotland. (2021) General Practice – GP Workforce and Practice list sizes 2010–2020. National Statistics. <https://www.publichealthscotland.scot/publications/general-practice-gp-workforce-and-practice-list-sizes/general-practice-gp-workforce-and-practice-list-sizes-2010-2020/>
48. Information Services Division (2018) Primary Care Workforce Survey Scotland 2017. A survey of Scottish General Practices and General Practice Out of Hours Services. NHS National Services Scotland. <https://www.isdscotland.org/Health-Topics/General-Practice/Publications/2018-03-06/2018-03-06-PCWS2017-Report.pdf>
49. ScotCen Social Research. (2021). The Scottish Health Survey 2020 edition. Volume 1. <https://www.gov.scot/publications/scottish-health-survey-telephone-survey-august-september-2020-main-report/pages/6/>
50. Hughes J. RSPB Unpublished National datasets for UK and Scotland, NR6 collected October 2020 – April 2021
51. Recover Restore, Renew. Chief Medical Officer for Scotland Annual Report 2020–2021. NHS Scotland. Published by The Scottish Government, March 2021.
52. Nature For Health Foundation Healing Landscape Debate (2020). <https://twitter.com/DrTedros/status/1313841150483202048?s=20>