# ROOTS

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## BOTANIC GARDENS, MENTAL HEALTH AND WELLBEING

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Cover image: Member Mornings offer time for personal connection (Scott Dressel-Martin, courtesy of Denver Botanic Gardens)

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# FIRST WORD

**Helen Miller**
Head of Engagement and Learning



# BOTANIC GARDENS, MENTAL HEALTH AND WELLBEING



In an ever more urban, isolated and digital world, many of us feel the impact that day to day life has on our wellbeing. Social isolation, rising costs of living and environmental anxiety, all contribute to societal mental health and wellbeing.

In addition, according to the World Health Organization, more than 1 billion people are living with mental health disorders (WHO 2025). A 2025 report by Mental Health Today highlighted anxiety and depression as the most common types of mental health disorders, and have a significant economical and personal impact, costing the global economy an estimated US$ 1 trillion each year (in addition to the associated health costs).

It is however recognised that access to green spaces and spending time in nature can have a beneficial impact on mental health and well-being – reducing stress hormones, lowering anxiety and depression risks and fostering social connection. A recent study found that the larger the green space and longer the visit leads to greater well-being (Douglas et al, 2026).

It has therefore been clear to our sector for a long time, that botanic gardens and arboreta play an important role in providing visitors and wider communities with a place of connection and wellbeing. More recently our sector has been exploring how we can grow this role, and how our spaces and our programmes can be adapted to deliver direct benefits for those suffering from mental health and wellbeing challenges. In this issue we are pleased to share a range of articles illustrating some of the many exciting and meaningful programmes that botanic gardens and arboreta are delivering to meet this need.

Forest therapy is explored in two articles, firstly at Hantaek Botanical Garden who have explored the effects of botanical garden forest therapy on the health of older adults (page 8). At Royal Botanic Gardens Victoria who look at the growing practice and science behind forest bathing (page 17).

Learn more about therapeutic horticulture on page 14, where Partnerships for Nature and North Carolina Botanical Garden share their programme working with gardens in Ukraine, and a further article from North Carolina Botanical Garden that is using therapeutic horticulture for community mental health (page 24).

At Fairy Lake Botanical Garden they have been developing botanical garden experiences for visually impaired visitors (page 20), and at Westonbirt, The National Arboretum they share their experiences of unlocking the health giving power of an arboretum (page 11).

On page 28, read how Denver Botanic Gardens is helping form the Colorado Wellbeing Collaborative, to connect arts, culture, nature, recreation, health and community assets across the state. On page 4 you can hear about Meise Botanic Gardens' programme to foster belonging among displaced people while confronting their own colonial histories. Finally on page 32, learn about Rio de Janeiro Botanical Gardens use of phytoimaginary spaces to explore restorative botany for urban communities.



As always we hope you enjoy this latest issue.

References

- Douglas, J., Willcock, S., Kibowski, F., Marshall, T. and Jones, L. (2026) 'Mental health benefits of urban green space are shaped by green space attributes, visitor characteristics and the activities they undertake', *Ecosystems and People*, 22:1, 2624444, DOI: 10.1080/26395916.2026.2624444

- World Health Organisation, (2025) 'Mental health today: latest data'. Geneva: World Health Organisation

**Author:** Marie Despiegelaere

# ROOTEDNESS AND DISPLACEMENT: THE ROLE OF BOTANIC GARDENS IN FOSTERING BELONGING




This article explores how botanic gardens can foster belonging among displaced people while confronting their own colonial histories. Drawing parallels between uprooted plants and human displacement, it examines the challenges refugees face in rebuilding their lives and finding a sense of home. Through a programme at Meise Botanic Garden, gardening, cooking, and cultural exchange create opportunities for wellbeing, community, and mutual learning. However, meaningful inclusion requires more than temporary initiatives: it demands long-term institutional commitment, recognition of diverse knowledge, and equitable partnerships. Botanic gardens can become spaces where displaced people are not merely welcomed, but recognised as valued contributors who help shape more inclusive and interconnected communities.

We do not choose the soil in which we first take root. The circumstances of our birth and access to education, social welfare, safety, and equality—fundamentally shape our opportunities and wellbeing. Like plants, people depend on their environment to flourish.

Yet not everyone grows in fertile ground, and not everyone has the freedom to remain where they began.

Above: Meise Botanic Garden is a place where everyone is welcome (Marie Despiegelaere)

Through the lens of botanic gardens, this article explores how nature can foster wellbeing, cultural exchange, and connection for displaced people, while challenging the colonial legacies of botanical institutions themselves. Can a garden become more than a temporary refuge—a place where new roots can grow and different forms of knowledge are valued?

**Migration: The experience of being uprooted**

Displacement disrupts the relationship between living beings and their surroundings. Plants are removed from their original habitat, transported across continents, and classified as native, foreign, or invasive. People, too, are forced to leave their homes, often losing the familiar landscapes, cultural connections, and social structures that sustain their sense of belonging.

Migration is an experience of uprooting. As Mohammedali Abunajela, spokesperson and director of DMC (Media and Communications Division, part of the International Organization for Migration), reflects:

*"Home, once ordinary, now reveals its true weight: the quiet certainty of being rooted, known, and never having to explain where you come from. This is how it begins – not with movement, but with rupture."*

This rupture is often followed by a precarious journey. Some reach their intended destination, others become stranded along the way, and some never arrive. In 2025 alone, 1,126 migrants were reported dead or missing at sea.

For those who arrive, the journey is far from over. Newcomers must learn a language, navigate unfamiliar administrative systems, find housing and employment, and rebuild their lives. The concept of *migration pain* encompasses the emotional, social, economic, and practical challenges of this transition, from leaving loved ones behind to renegotiating one's identity and social connections.

The experience resembles that of a tree uprooted from familiar soil and replanted in an unfamiliar environment. It needs time to adapt to new conditions, establish relationships with other organisms, and extend its roots and branches once again. As Abunajela observes, arrival is not an ending but another beginning, starting in the reception centre.



*Can a garden become more than a temporary refuge – a place where new roots can grow?*

## REFERENCES


Botanic Gardens Conservation International (2010) 'Towards a new social purpose: Redefining the role of botanic gardens'. Available at: https://www.bgci.org/resources/bgci-tools-andresources/towards-a-new-social-purpose-redefining-the-role-of-botanic-gardens/

Haswell, N. (2023) 'Nature and belonging in the lives of young refugees: A relational wellbeing perspective', *Social Sciences*, 12(11), article 611. Available at: https://doi.org/10.3390/socsci12110611.

International Organization for Migration (n.d.) I beg you, understand how migrants feel. Available at: https://www.iom.int/news/i-beg-you-understand-how-migrants-feel

Kimmerer, R.W. (2013) 'Braiding sweetgrass: Indigenous wisdom, scientific knowledge, and the teachings of plants'. Minneapolis, MN: Milkweed Editions.

Melsheimer, J. (2021) 'Rethinking botanical gardens and their colonial legacy', The Brussels Times, 12 November. Available at: https://www.brusselstimes.com/opinion/193474/rethinking-botanical-gardens-and-theircolonial-legacy (Accessed: 16 October 2026).

United Nations High Commissioner for Refugees (UNHCR) (n.d.) 'Situation Europe sea arrivals'. Available at: https://data.unhcr.org/fr/situations/europe-sea-arrivals/location/24521

Wang, F.K.-H. (2023) 'How gardens enable refugees and immigrants to put down roots in new communities', PBS News, 6 September. Available at: https://www.pbs.org/newshour/arts/howgardens-enable-refugees-and-immigrants-to-put-down-roots-in-new-communities


Exchanging knowledge flows both ways (Madison Trempont)



Walking together in the garden and observing nature are important parts of the day (Marie Despiegelaere)



An arrival centre in Brussels, Belgium (Fedasil)

Reception centres often face poor infrastructure, long waiting lists, and inadequate living conditions. Despite the dedication of their staff, limited investment and increasingly restrictive migration policies perpetuate these challenges.

The institutionalised temporariness of reception centres further complicates the development of belonging. Newcomers may be discouraged from personalising their rooms, while young people can spend months waiting for access to education or employment. Life becomes a prolonged state of waiting, with limited opportunities to establish routines, exercise autonomy, or imagine a future.

A botanic garden can offer a green sanctuary away from these pressures. It provides space to reconnect with nature, experience moments of calm, and participate in meaningful activities. As Nick Hasswell argues, natural spaces in receiving countries can contribute to peace, restoration, and refugee resettlement. Yet a botanic garden offers more than access to nature. Through its connection to science, research, and education, it can create opportunities for learning, participation, and a renewed sense of possibility.

*Participants are not merely recipients of education or assistance; they are gardeners, cooks, and holders of valuable botanical and cultural knowledge.*

### The botanic garden as a space of refuge and belonging

Meise Botanic Garden in Belgium is located next to the capital. In the garden we developed a programme welcoming asylum seekers from several reception centres in Brussels. For the moment, the workshop is focused on unaccompanied minors and young adults aged 10 - 25. Through hands-on activities in our Culinary Garden, participants dig, weed, grow and harvest crops, and prepare meals using the day's harvest.

Cultivating the land can foster community, confidence, practical skills, and a sense of agency. It also offers an opportunity to establish new roots in an unfamiliar environment while maintaining an emotional and cultural connection to one's homeland. Gardening and cooking become expressions of cultural identity and continuity, helping participants find their place in a new society.

The workshop also provides opportunities for cultural exchange. Participants learn about Belgian crops and sustainable agriculture while becoming more familiar with the Dutch language. At the same time, they share their own knowledge, teaching staff how to prepare Palestinian *msakhan* or how to pronounce the word for garlic in Yoruba.



From garden to kitchen, the asylum seekers tended, harvested and cooked vegetables together (Madison Trempont)

Participants are not merely recipients of education or assistance; they are gardeners, cooks, and holders of valuable botanical and cultural knowledge. Recognising their experience challenges the assumption that knowledge flows exclusively from scientific institutions towards the communities they serve.

Research suggests that natural environments, including parks and community gardens, can help refugees connect with their new surroundings and communities. Nature can connect different dimensions of belonging: emotional restoration in the present, memories of familiar landscapes and cultural practices, and hopes for the future. A plant, a familiar vegetable, or the act of tending a garden can evoke memories of home while making space for new attachments.

Nevertheless, belonging cannot be created through nature alone. Access to green spaces does not replace secure housing, education, employment, legal protection, or social inclusion.

### From colonial legacies to inclusive institutions

The question of belonging takes on particular significance when considered against the history of botanic gardens themselves. Many Western institutions developed within colonial systems that facilitated the collection, transportation, classification, and commercial exploitation of plants across continents. Botanical knowledge, plant specimens, and economic resources moved through unequal networks of power, often accompanied by the dispossession of Indigenous Peoples and the appropriation of their knowledge. This history creates a compelling parallel between the displacement of plants and that of people.

Botanic gardens are not neutral spaces. Situated at the intersection of society and nature, they reflect wider political and historical structures. Their social role, organisational cultures, and institutional priorities therefore deserve critical examination.

Welcoming refugees into a garden is a valuable first step, but inclusion requires more than inviting people to visit. It means recognising them as active participants in the institution's life, valuing their expertise, and creating opportunities for their contributions to shape its work.

For botanic gardens to become genuinely inclusive spaces, social engagement must be embedded in their long-term strategies rather than treated as a temporary project or an expression of goodwill. Initiatives that depend exclusively on short-term funding or the personal commitment of individual staff members remain vulnerable and risk becoming symbolic gestures rather than lasting institutional change.

This approach requires sustained resources, meaningful partnerships, and a willingness to reconsider established assumptions about whose knowledge matters and who belongs in scientific and cultural institutions. It also requires acknowledging the colonial histories that have shaped botanical collections and practices, and actively working towards more equitable relationships with communities affected by displacement and historical inequalities.

Plants and people may have different relationships with movement, place, and survival, but considering their experiences together raises a shared question: Who has the right to belong, and who has the power to decide?

Botanic gardens have an opportunity to address this question through their daily practices. By combining conservation with social responsibility, they can become places where new relationships take root, where cultural and botanical knowledge meet, and where belonging is understood not as something granted by origin, but as something nurtured through participation, reciprocity, and care.

*Cultivating the land can foster community, confidence, practical skills, and a sense of agency. It also offers an opportunity to establish new roots in an unfamiliar environment while maintaining an emotional and cultural connection to one's homeland.*



From garden to kitchen, the asylum seekers Cooking and sharing a meal can build social bonds between different cultures (Marie Despiegelaere)

*Who has the right to belong, and who has the power to decide?*


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# EFFECTS OF BOTANICAL GARDEN FOREST THERAPY ON THE HEALTH OF OLDER ADULTS

With rapidly aging populations, sarcopenia and mental health conditions present major health risks for older adults. This study evaluated whether a ten-week forest therapy programme in a botanical garden could improve health. Thirty-one older adult participants (mean age ~72.3) participated weekly for ten weeks. The results showed significant improvements in muscle strength (right handgrip, trunk, hip, knee) and senior fitness (chair stand, arm curl, etc.). Participants experienced significant reductions in depression and anxiety, plus improved sleep quality. These findings suggest botanical gardens serve as effective spaces to enhance physical and mental health.

## 1. Introduction and background

As aging societies accelerate, the importance of health care for older adults is increasing. One of the diseases that threatens health in old age is sarcopenia. Sarcopenia causes an involuntary loss of skeletal muscle mass and strength, causing difficulties in physical activity, and is also associated with acute and chronic diseases, falls, fractures, and mortality (Sayer & Cruz-Jentoft, 2022). In addition, older adults suffer from mental problems such as depression and anxiety due to social isolation and economic difficulties (Institute of Health Metrics and Evaluation, 2019). Forest therapy is known to be effective as a healthcare intervention for a variety of subjects (Baek et al., 2022; Yeon et al., 2022). Recently, botanical gardens are emerging as a healthcare space for improving physical and mental health but little has been done to use them as healthcare spaces to prevent sarcopenia in the elderly. Therefore, this study aimed to investigate the effects of applying a forest therapy programme in botanical gardens on the physical and psychological health of older adults to prevent sarcopenia.



Above: Balance training using natural materials found within the botanical garden
Top: Participants conducting stretching utilising cane (courtesy of programme staff)



## 2. Research methodology

### 2.1. Study design and participants

We employed a one-group pre-test-post-test experimental design. Individuals were recruited through a local clinic advertisement; we selected subjects who met the inclusion and exclusion criteria. A total of 31 older adults (mean age: 72.29 years) residing in the local community were recruited. Inclusion criteria were adults aged 65 years or older who were capable of independent ambulation without assistive devices and had no severe cognitive impairments. In contrast, exclusion criteria were those who abuse cigarettes and alcohol and older adults who have participated in a similar programme within the past three months prior to participation in this study.

### 2.2. Study site

The study was conducted at the Hantaek Botanical Garden in Gyeonggi-do, Republic of Korea. Since its establishment in 1979, Hantaek Botanical Garden has been a representative private botanical garden in Korea. It consists of 33 themed gardens and holds approximately 9,700 plant species, including 2,400 native and 7,300 exotic plants, while striving to protect and propagate them. Hantaek Botanical Garden was created with plant characteristics and ecological environments, and it is known as an ideal botanical garden for ecological and environmental education due to its high biodiversity maintained through long-term eco-friendly management.

### 2.3. Intervention programme

The forest therapy programme was conducted once per week for ten consecutive weeks, with each session lasting approximately 180 minutes. The programme's main theme was to improve physical and psychological health by enhancing the muscle mass and physical performance of the participants through use of the botanical garden. The main activities of this programme were "Five sensory activities (visual, auditory, tactile, olfactory, taste), "Tree strength training (eight movements), "Diaphragm breathing", "Singing in nature", and "Taekwondo".

**Outcome measures:** Physical and psychological parameters were thoroughly evaluated before and after the intervention. Physical performance was measured using the Senior Fitness Test (SFT), grip strength, trunk (flexion/extension), and hip/knee joints (flexion, extension, adduction) strength. SFT was comprehensively measured via six standardized items: Chair Stand Test (lower body strength), Arm Curl Test (upper body strength), 2-Minute Step Test (aerobic endurance), Chair Sit and-Reach Test (lower body flexibility), Back Scratch Test (upper body flexibility), and the 8-Foot (2.45 m) Up-and-Go Test (agility and dynamic balance and is measured in time). Muscle strength was evaluated using digital dynamometers. Psychological outcomes were assessed using the Geriatric Depression Scale Short Form (GDS-SF), the Geriatric Anxiety Inventory Short Form (GAISF), and the Pittsburgh Sleep Quality Index (PSQI).



Above: The landscape of the Hantaek Botanical Garden
Left: A singing activity in a botanical garden for emotional expression and breathing control (courtesy of program staff)

*The findings of this study suggest that a structured forest therapy programme within a botanical garden environment can effectively combat sarcopenia risk factors while simultaneously improving mental health in older adults.*



Participants engaging in visual sensory activities (courtesy of program staff)

*These outcomes highlight nature-based interventions as promising, low-cost preventative approaches against sarcopenia and geriatric psychological distress.*

## 3. Key findings

Following the ten-week forest therapy programme, participants' physical and mental health significantly improved. In terms of physical health, participants experienced improvement in muscle strength (right handgrip, trunk flexion, trunk extension, hip flexion, hip adduction, knee flexion, knee extension) and senior fitness (chair stand, Arm curl, two-minute step, chair sit and reach, back scratch, except 2.45m up and go).

Beyond the notable physical improvements, the study demonstrated profound psychological benefits. Following the forest therapy programme, participants experienced significant reductions in both depressive symptoms and anxiety levels compared to baseline scores. Furthermore, the results indicated a significant improvement in overall sleep quality as measured by the sleep index.

- **Discussion and limitations**

  The findings of this study suggest that a structured forest therapy programme within a botanical garden environment can effectively combat sarcopenia risk factors while simultaneously improving mental health in older adults. The significant improvement in lower-limb strength and functional physical fitness can be attributed to the weight-bearing and balance-demanding components of 'tree strength training' and 'Taekwondo', which effectively stimulate motor unit recruitment in older adults. Furthermore, combining group singing and diaphragmatic breathing in the rich, multisensory environment of the botanical garden reduced depression and anxiety and improved sleep quality.

  However, this study had several limitations. First, this study utilised a single-group pre-test post-test design without a randomised control group, making it difficult to fully isolate the programme's effects from potential confounding factors such as seasonal shifts or general social interaction. Second, the small sample size (N = 31) limits the generalisability of the findings to broader populations with severe frailty or clinical sarcopenia. Future studies should employ randomised controlled trials (RCTs) with larger sample sizes and long-term follow-up assessments to evaluate the sustainability of these health benefits.

## 4. Conclusion

Hantaek Botanical Garden's forest therapy programme is not limited to a one-time experience; its purpose is to help people make it "sustainable" in their daily lives. The programme consists of effective activities that seniors can easily do in parks or botanical gardens near their homes.

Furthermore, even after completing the programme, the plan is to link it with a "customised botanical garden volunteer programme" so that the seniors can continue visiting the botanical garden regularly and steadily improve their physical and mental health. By participating in low-pressure volunteer activities such as gardening and supporting plant care, older adults will continue to enjoy a virtuous cycle of healing effects, including maintaining natural physical activity, building bonds, and fostering a sense of accomplishment and social responsibility.

This study demonstrates that a structured ten-week forest therapy programme utilising botanical garden spaces effectively enhances skeletal muscle strength and functional fitness in community dwelling older adults, offering a viable preventive approach against sarcopenia. These outcomes highlight nature-based interventions as promising, low-cost preventative approaches against sarcopenia and geriatric psychological distress. Ultimately, this research underscores the potential of botanical gardens to transition from passive recreational sites into proactive, community integrated healthcare spaces for healthy aging.



Participants performing tree strength training (courtesy of program staff)

## REFERENCES


Baek, J.E., Jung, J.H., Shin, H.J., Kim, S.H., Sung, S.Y., Park, S.J. and Lee, M.G. (2022) 'Effects of forest healing anti-aging program on psychological, physiological, and physical health of older people with mild cognitive impairment', *International Journal of Environmental Research and Public Health*, 19(8), p. 4863.

Institute for Health Metrics and Evaluation, (2024) *Global Health Data Exchange (GHDx)*. Available at: https://vizhub.healthdata.org/gbd-results (Accessed 1 February 2024).

Sayer, A.A. and Cruz-Jentoft, A. (2022) 'Sarcopenia definition, diagnosis and treatment: consensus is growing', *Age and Ageing*, 51(10), p.afac220.

Yeon, P.S., Jeon, J.Y., Jung, M.S., Min, G.M., Kim, G.Y., Han, K.M., Shin, C.S. and Shin, W.S. (2021) 'Effect of forest therapy on depression and anxiety: A systematic review and meta-analysis', *International Journal of Environmental Research and Public Health*, 18(23), p.12685.


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# THE PEOPLE UNLOCKING THE HEALTH GIVING POWER OF AN ARBORETUM

Forestry England's Westonbirt, The National Arboretum in Tetbury, Gloucestershire welcomes over 600,000 visitors a year, but many people in the local area face significant barriers that prevent them from accessing nature.

Run by one member of staff, Mandy Leivers, supported by 27 trained volunteers, Westonbirt's Community Programme exists to remove those barriers and help these local groups of people enjoy the wellbeing benefits, confidence and connection that come from spending time outdoors.

The programme welcomes over 3,000 participants annually from underserved, overlooked and marginalised communities based near Westonbirt.

Imagine what it feels like not being able to talk to other people your own age or living in similar circumstances to you? Not feeling confident enough to catch a bus or still feeling socially isolated and insecure following the Covid pandemic?

This is exactly the type of person Westonbirt Arboretum's Community Programme exists to support, and is making a difference to people's lives by improving their wellbeing and mental and physical health.

Activities take place at Westonbirt Arboretum, both onsite and through outreach, for over 3,000 participants annually from underserved, overlooked and marginalised communities based nearby. The activities offer meaningful, hands-on experiences such as traditional woodland skills, mindfulness, nature discovery, creative projects and campfire cooking.




Above: Wellbeing comment from participant at Eid event, Westonbirt (Mandy Leivers). Top: Wild Westonbirt participants with Mandy Leivers (Forestry England)



What makes Westonbirt special is the depth of care, patience and personalised encouragement provided by the team. They are skilled at supporting individuals with complex needs, nurturing confidence through small but powerful achievements, such as: spotting wildlife, completing a task, or simply feeling safe enough to engage.

Mandy Leivers, Westonbirt's Community Coordinator says:

*"Our Community Programme is designed to support people from diverse communities, supporting positive mental health and wellbeing through an equally diverse programme of onsite and outreach activities.*

*None of this would be possible without the positivity and tireless dedication shown by our volunteers who help deliver the programme".*

The work Mandy and her team carry out is split by various projects that together make up Westonbirt's Community Programme.

Westonbirt's **Community Access Scheme (CAS)**, currently supports 59 local groups. CAS helps remove barriers that may prevent some people from visiting independently, providing discounted entry and giving participants the opportunity to experience the wellbeing benefits of spending time among trees. The scheme is designed for organisations working with people who face physical, sensory, psychological or social challenges, including those with learning or physical disabilities, mental health issues, dementia, or who may be vulnerable, isolated or socially excluded.

Over seven sessions that began in May 2026, the Community Team worked with Aurora Severnside School on our '*Nutured by Nature*' multi-visit wellbeing programme for nine learners. This specialist school supports secondary aged pupils with additional needs including: autism, anxiety and emotional and behavioural disorders. During the sessions, improvements were seen in terms of their engagement, confidence, behaviour and wellbeing. A teacher observed:

*"Our young people can have very low self-esteem, their lives have contained a great degree of failure. The team at Westonbirt notice every small success and celebrate it. For our young people, this opportunity to succeed is valuable and rare."*

A parent observed:

*" XXX returns home much lighter in mood every Friday. They love coming and they've been very excited to show us the things that they have learnt. It's the value, when you feel like the world around you understands you; that builds faith which then builds faith in the school system too. This is the optimal environment for learning."*

Left: Our Wild Westonbirt group
Below: Comment Tree created by Gloucester's Friendship Café Eid event at Westonbirt Arboretum (Mandy Leivers)



*"Pure escapism from day to day caring. Really improved my low mood, I feel energised."*
***Visitor from Bristol & South Gloucestershire Carers Support***






Cotswolds Outdoor Fun Group end of programme celebration event. Participants received certificates to mark their achievements (Alison Whaley)

'Wild Westonbirt' is a monthly conservation group for 14 - 20 –year-olds. Some members have attended since 2021 and many are neurodivergent. The group explores the arboretum through creative and sensory activities, monitors wildlife, plants trees, lay hedges and are helping to restore an area of derelict coppice woodland. Mandy observes that they are a delightfully welcoming, inclusive group and are overjoyed to see each other at the beginning of each session!

**Multi visit programmes** form a large part of the community team's work and also provide solid evidence of the difference repeated visits to the arboretum can make for these participants.

A few examples of the multi-visit groups illustrate, in their own words, how the visits make a difference:

- Cotswolds Outdoor Fun Group: Run in partnership with the Cotswolds National Landscape and World Jungle to support secondary-aged learners, with additional needs, whose needs can't be met in a mainstream school or Home Ed setting. Testimonials from parent/carers of young people who took part:

*"XXX has loved every single minute of his time here. He's learned so much. He comes home so happy and relaxed and looks forward to the next time...it's been a truly amazing experience".*

*"I can't thank you enough for this programme. Just look at him, he's so happy. I can tell by his face and his body language that he feels so comfortable here. He's made a really good friend with XXX. He's tried lots of other groups with neurotypical young people and never really felt he fitted in anywhere before but does with this group".*

- 43 people from Gloucester's Friendship Café visited for special 'Eid in Nature' events. Comments demonstrating the benefits to participants included:

*"As someone who lives in the city, this amazing place full of nature is brilliant for my mental health. Thank you!"*

*"I loved the pretty trees and the staff were so kind and I would recommend going to the park."*

- Bristol & South Gloucestershire Carers Support visited in the colder months of January and February 2026, encouraging individuals to get outside and meet others in similar situations, shaking off the stresses of being cooped up over winter when they can feel isolated. Participants commented:

*"Pure escapism from day- to-day caring. Really improved my low mood, I feel energised."*

*And "During the activities I was able to "switch off" a little from my commitments. The compassion shown from the staff helped me to feel a little bit spoilt and more valued. Thank you to everyone."*

Westonbirt Arboretum acknowledges the support of the National Heritage Lottery Fund, who funded the first four years of the community programme, and to the Barnwood Trust, Gloucestershire County Council and the Friends of Westonbirt Arboretum charity for supporting the continuation of the programme.



Cotswolds Outdoor Fun Group participant learning to coppice hazel trees at Westonbirt Arboretum (Helen Komor)

*"Our Community Programme is designed to support people from diverse communities, supporting positive mental health and wellbeing through an equally diverse programme of onsite and outreach activities"*
***Mandy Leivers, Westonbirt's Community Coordinator***

*"As someone who lives in the city, this amazing place full of nature is brilliant for my mental health. Thank you!"*
***Visitor from Gloucester's Friendship Café***

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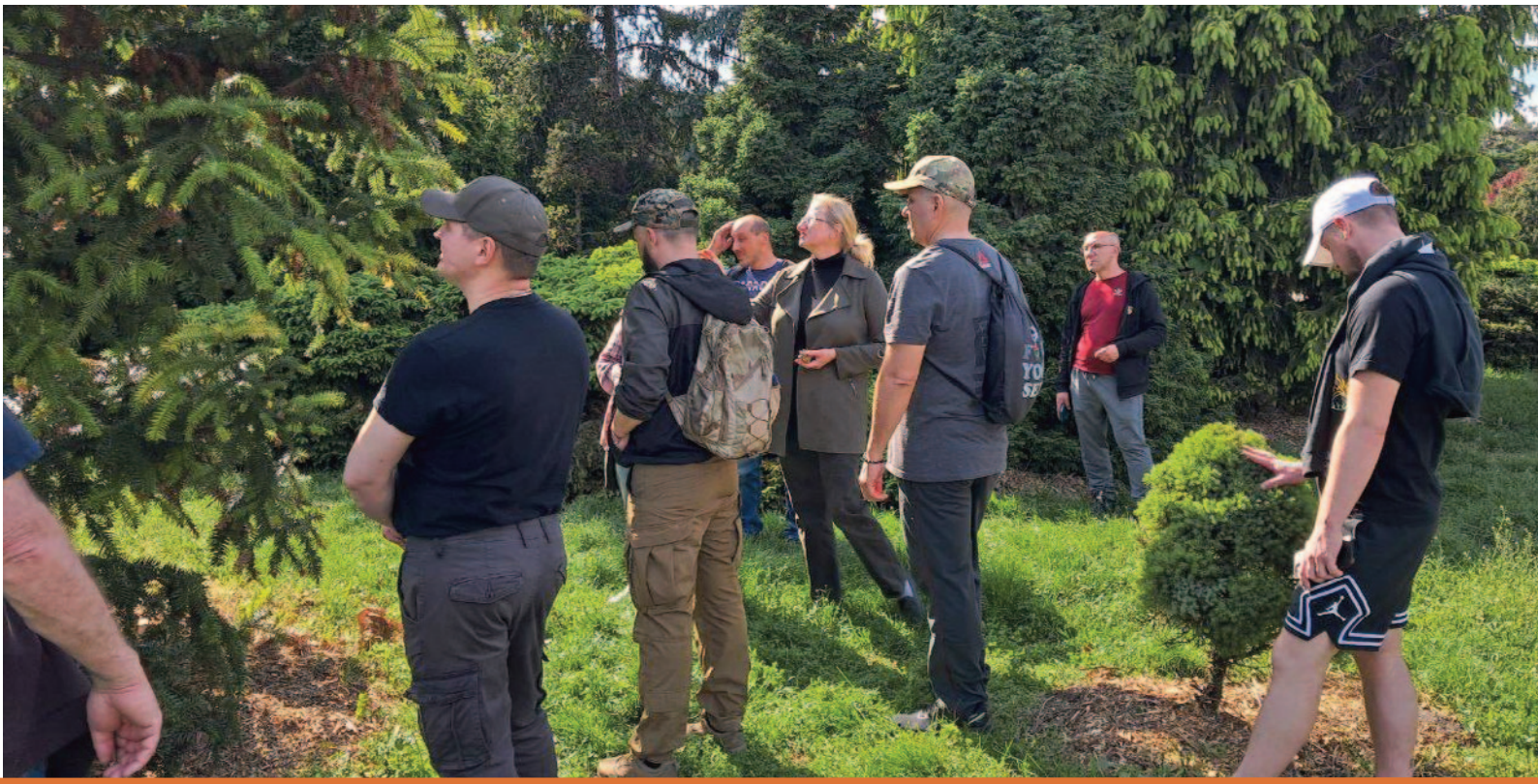
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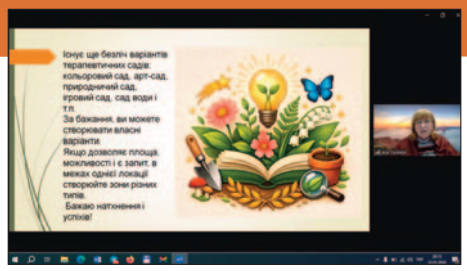
# THERAPEUTIC HORTICULTURE BLOSSOMS IN UKRAINE'S BOTANICAL GARDENS – AND BEYOND!



Botanical gardens, with their rich floral collections, tranquil trails, quiet corners, and deep connections to the natural world, serve as unique oases of respite all over the world. This role is especially important in Ukraine, a country experiencing its fifth year of a devastating war. Fortunately, Ukraine is blessed with a large number of beautiful botanical gardens. With the help of international partners, several of these gardens have developed a particularly effective form of nature healing for their communities: therapeutic horticulture.

Therapeutic horticulture (TH) is the professionally facilitated use of plant- and nature-based activities to actively support the health and well-being of participants. TH programs can be facilitated indoors or outdoors. Participants may be engaged in gardening, plant care, and other experiences intentionally designed to support individual or group goals related to emotional resilience, physical recovery, cognitive functioning, social interaction, and overall well-being.

Widespread and growing internationally, TH is rooted in evidence-based outcomes. It draws on deeply human, timeless connections with plants and nature as sources of healing and renewal. Botanical gardens are ideal settings for TH, but the practice can also take place in parks, schoolyards, children's camps, urban gardens, healthcare facilities, residential programs, and other settings.



Above: Asya Holokoz leads an online TH class for other Ukrainians in early 2026 (Myroslava Helesh). Top: Alla Gnatiuk of Gryshko National Botanical Garden in Kyiv, leads a TH program for veterans (Zhanna Yaroslavskaya)

In late 2023, Partnerships for Nature (PN), a U.S. nonprofit that had been working closely with Ukraine's botanical gardens for several years to expand and strengthen environmental education programs, proposed bringing therapeutic horticulture (TH) to Ukraine. Garden leaders and staff responded with enthusiasm. As Myroslava Helesh, a scientist-educator at Ivan Franko University Botanical Garden in Lviv, puts it, "This seemed to us to be a way to make a concrete contribution during the war. Through studying and implementing TH programs, we felt we could assist traumatized populations such as displaced families, children with mental and physical disabilities, the elderly, and military veterans."

In early 2024, PN began introducing TH to its Ukrainian partners through webinars, online discussions, and written materials. For professional expertise, PN turned to North Carolina Botanical Garden (NCBG), a recognized leader in TH training worldwide, and its TH Manager at the time, Emilee Weaver. With over 15 years of experience developing TH programs in diverse settings, Emilee had worked with a wide range of populations. She was delighted to join the initiative. "Since the war began in early 2022," she recalled, "I had been wondering what I could do to help Ukraine. Now I had the opportunity to apply my skills and experience in a direct way with a group that already had deep botanical knowledge – and they turned out to be very quick learners!"

As part of the Ukraine collaboration, Emilee and PN's Board President and Co-Founder, Tony Allison, led a project with ten scientist-educators from Ukrainian botanical gardens that included online training, mentorship, and the translation into Ukrainian of an online TH Certificate Program originally developed through a unique partnership between NCBG, an entity of the University of North Carolina-Chapel Hill, and North Carolina State University (NCSU). Emilee coached the group as they began to launch pilot TH programs. In October 2024, Tony and Emilee traveled to southeastern Poland to conduct a three-day hands-on TH workshop for their Ukrainian partners, who crossed the border into Poland to attend. The following June the ten new practitioners received TH certificates endorsed by PN and NCBG/NCSU in an emotional online ceremony.

By the end of 2024, over 2,000 Ukrainians had participated in TH-related programs in five botanical gardens across Ukraine, and the numbers have continued to grow in 2025 and 2026. Evaluations by participants and their caregivers have been universally positive. As anticipated, participants in Ukraine's emerging TH programs include children, displaced families, veterans, those with physical and mental disabilities, and others affected by trauma, loss, and psychological challenges.

"In war, children experience stress and uncertainty about the future," explains Tetiana Sobko of Kryvyi Rih Botanical Garden of the Ukrainian National Academy of Sciences, which is located near the front lines in central Ukraine. "TH activities help to expand the circle of communication, improve mood, and relieve psychological tension." Programs in the Kryvyi Rih garden have included planting and caring for trees and shrubs, enjoying aromatic and sensory plants, and sharing "botanical tea" sessions designed for relaxation.

In early 2026, Myroslava, Tetiana, and two of their colleagues took a big step forward to spread TH practices further in Ukraine: with guidance from Emilee, they developed and taught a new Ukrainian-language online TH course, drawing on their experiences and training. The course took place with 19 participants from botanical gardens and other organizations across Ukraine, including national parks, schools, and social service centers, and created new networks of crosstraining and collaboration. Asya Holokoz, of I. I. Mechnikov Odesa University Botanical Garden, one of the teachers, says that the diversity of the participants "allowed us to look at TH and its possibilities from a broader perspective." Although the course was introductory and was only six weeks long, Asya is certain that "even those participants who won't be leading TH programs soon will be integrating TH principles into their work – and this was reflected in their course evaluations." The course leaders are planning for another class in early 2027, building on the materials and knowledge they developed this year.



Map showing major Ukrainian botanical gardens, with PN's main partner gardens highlighted (Hardian Hernandez and Laura McCormick)

*"Since the war began in early 2022, I had been wondering what I could do to help Ukraine. Now I had the opportunity to apply my skills and experience in a direct way with a group that already had deep botanical knowledge – and they turned out to be very quick learners!"*
***Emilee Weaver***


Damage from air attacks to Odesa University Botanical Garden (Liudmila Levchuk)

*"TH activities help to expand the circle of communication, improve mood, and relieve psychological tension."*
***Tetiana Sobko***

Seeing the overwhelmingly positive reception of TH in Ukraine, in 2024 PN began discussions with its partners in Armenia and the Republic of Georgia about implementing TH there. Both countries have experienced wars in the recent past, and have been looking for ways to assist vulnerable populations, including those with disabilities and special needs. In late 2024, PN arranged a TH workshop led by Emilee at Yerevan Botanical Garden in Armenia, which was attended by a wide range of local organizations and garden staff, and by two leaders from the National Botanical Garden of Georgia (NBGG). Pilot TH programs were soon launched in Armenia by a new NGO, Plants and People, headed by another recipient of NCBG/NCSU online training, Zoya Dutova. In 2026, three other Armenian psychologists received TH certificates from Root in Nature (now GrowTH), a Canadian organization where Emilee spent a year developing programs.

The next step, in late October of 2026, was a large-scale international TH workshop at NBGG in Tbilisi, Georgia. Emilee led the workshop alongside experienced TH practitioners from Ukraine and Armenia, facilitating the launch of TH programs at NBGG and local partner organizations. "Successful implementation of the project will significantly contribute to the development of therapeutic horticulture in Georgia and help vulnerable groups in social integration and psycho-emotional rehabilitation," asserts Giorgi Javakhishvili, Head of the Educational and Public Projects Department of NBGG.

Despite contested borders and international conflicts, as well as financial challenges, the circle of TH networks initiated by Partnerships for Nature grows ever larger.

Tragically, the war in Ukraine has recently grown even more devastating, with frequent air attacks on major cities such as Kyiv, Kharkiv, and Odesa. "Things in Odesa are very difficult now," says Asya "We are experiencing constant bombardments, with air alert sirens going off. We take cover for a few minutes – it's very hard to concentrate on anything in such circumstances.... But people really need support, so they come to our garden. Amidst the green surroundings there is a temporary sense of safety, and we distract them from the outside world with our TH programs. We are very proud of our work."





TH program for children at Kryvyi Rih Botanical Garden (Tetiana Sobko)

*Despite contested borders and conflicts, as well as financial challenges, the circle of TH networks initiated by Partnerships for Nature in the region grows ever larger.*



Group activity during the TH workshop at the National Botanical Garden in Tbilisi, Georgia, in October of 2026 (Myroslava Helesh)

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# NATURE'S QUIET MEDICINE. THE CASE FOR FOREST THERAPY



More than a walk in the park, Forest Therapy is an invitation to slow down, reconnect with nature and rediscover the restorative power of being present. Drawing on the expertise of Royal Botanic Gardens Victoria and insights from Australia's first accredited Forest Therapy guide, Susan Joachim, this feature explores the growing practice of forest bathing and the science behind its benefits. From reducing stress and improving wellbeing to fostering deeper connection with the natural world, Forest Therapy reveals how time among trees can help us find calm, clarity and balance in an increasingly busy world.

You're lying beneath a canopy of trees, watching sunlight filter through the leaves above. Around you, the forest hums with life. A breeze stirs the branches. Birds call in the distance. You take a deep breath and, almost without noticing, your focus shifts from the noise of everyday life to the world around you. Your mind slows. Your senses awaken.

For Susan Joachim, Australia's first accredited Forest Therapy guide and President, International Nature and Forest Therapy Alliance (INFTA), that gentle shift is at the heart of Forest Therapy. "People arrive carrying the pressures of daily life," she says. "Then something changes when they slow down and start paying attention to the natural world. They leave feeling calmer, clearer and more connected."

Known in Japan as Shinrin-yoku, or "forest bathing", Forest Therapy emerged in the 1980s as a preventative health practice. But despite its growing popularity around the world, it remains beautifully simple. There are no fitness goals, no step counts and no expectations to achieve anything at all.



Susan Joachim (RBG Victoria)

Instead, participants are invited to slow down and experience nature through all five senses. At Royal Botanic Gardens Victoria, Forest Therapy takes place throughout the year, with every season offering a different experience. Spring arrives with new growth and birdsong. Summer brings lush canopies and vibrant botanical displays. Autumn reveals changing colours and shifting light. The cooler months encourage stillness, reflection and a renewed appreciation of warmth, texture and sunlight.

The practice isn't about finding the perfect conditions. In many ways, it is about learning to appreciate whatever nature is offering in that particular moment.

"Our relationship with nature changes throughout the year," Susan says. "Every season has something unique to teach us, and Forest Therapy helps people notice those changes in a way they might otherwise miss."

That invitation to slow down feels increasingly relevant in a world where many of us spend our days moving from one screen to the next. We have become remarkably good at being busy, but not always at being present. Perhaps that's one reason Forest Therapy is attracting such widespread attention.

What began as a cultural practice has evolved into a globally recognised wellbeing approach, supported by a growing body of research exploring the relationship between nature, health and happiness. Royal Botanic Gardens Victoria's *Nature for Health and Wellbeing* (Chomley 2021) review found that time spent in nature benefits physical, mental and emotional wellbeing, helping reduce stress and positively influencing the nervous, endocrine and immune systems. Researchers now broadly agree that nature experiences can increase psychological wellbeing and help reduce risk factors associated with some mental health conditions.

Yet, Forest Therapy is about much more than statistics.

Spend time with participants and a common theme emerges. Many describe a sense of relief. Others talk about clarity, creativity or simply feeling more like themselves again.

The science offers some clues as to why.

Researchers have found that spending time in green spaces can reduce stress hormones, lower blood pressure and support healthy cardiovascular function. Studies have also linked nature exposure with improved mood, better sleep and reduced feelings of anxiety.

*"People arrive carrying the pressures of daily life. Then something changes when they slow down and start paying attention to the natural world."*

Susan Joachim

One of the most striking findings is how little time in nature appears to be needed to make a difference. Research cited in the Royal Botanic Gardens Victoria review found that as little as 10 to 20 minutes sitting or walking in green spaces can reduce stress, anger and anxiety while increasing positive feelings and a sense of refreshment.

Other studies have found that people who spend at least two hours in nature each week are more likely to report good health and high levels of wellbeing. The time can be accumulated to however suits a person's lifestyle: one long visit, several shorter visits or regular moments of connection throughout the week.

*In a world that rewards busyness, Forest Therapy offers something increasingly rare: the chance to simply be.*



*Just 10 to 20 minutes in nature can help reduce stress and restore a sense of calm.*

What makes Forest Therapy different from a walk through a park is intention and facilitation by the Forest Therapy Guide. Participants move slowly, often covering only a short distance over the course of a session. Guided sensory and creative activities encourage them to engage deeply with their surroundings. They might pause to notice the patterns on a leaf, listen to the different layers of sound in a landscape or feel the texture of a tree's bark. There is no right or wrong way to respond.

The goal is not exercise, although movement is part of the experience. The goal is connection. This approach aligns with what researchers call Attention Restoration Theory, which suggests that natural environments help replenish our ability to focus. Unlike the constant demands of modern life, nature captures attention gently, allowing the mind to recover from fatigue and overstimulation.

Anyone who has felt calmer after a walk among trees may recognise that feeling instinctively. Forest Therapy also draws on another fascinating aspect of human biology. Studies conducted in Japan have explored how forest environments influence immune function. Researchers observed increases in natural killer cells, which play an important role in defending the body against infection. Some scientists believe compounds released by trees, known as phytoncides, may contribute to these benefits.

The experience, however, rarely feels clinical.

Humans have spent most of their history closely connected to the natural world. Yet modern living often places us at a distance from it. Days are spent indoors, schedules are packed and natural rhythms become secondary to digital ones. Forest Therapy gently closes that gap.

Participants frequently report noticing details they would usually overlook: the scent of native plants after rain, the way sunlight moves through a canopy, the sound of wind across a lake or the quiet presence of wildlife nearby. These small observations can create a powerful sense of perspective.

Forest Therapy isn't about escaping life. It's about becoming more present within it. At Royal Botanic Gardens Victoria, that connection unfolds against a backdrop of extraordinary botanical diversity. Across the seasons, the landscape is constantly changing, offering new sensory experiences and new reasons to return.

One visit might be filled with colour and birdsong. Another may be quieter and more contemplative. The beauty of the practice is that it asks nothing more than curiosity.

Perhaps that is why Forest Therapy continues to resonate with people from all walks of life. In a culture that often celebrates speed and productivity, it offers permission to slow down. To look up. To breathe deeply. To notice. And in doing so, it reminds us that wellbeing is not always something we need to chase. Sometimes it is waiting beneath a canopy of trees, available in every season, asking only that we pause long enough to receive it.

"Every season has something unique to teach us, and Forest Therapy helps people notice those changes in a way they might otherwise miss."

*Spending at least two hours in nature each week is associated with better health and wellbeing.*



All images:
Forest Therapy at Royal Botanic Gardens Melbourne. Royal Botanic Gardens Victoria

## REFERENCES

Chomley, F. (2021) 'Nature for Health and Wellbeing: A Review of the Evidence', Royal Botanic Gardens Victoria, Melbourne, viewed 19 August 2026, <https://cdn.rbg.vic.gov.au/media/ydgkcbk1/rbg260-nature-for-health-and-wellbeing-report-far3-spreads.pdf>

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# NATURE-BASED RESILIENCE: BOTANICAL GARDEN EXPERIENCES FOR VISUALLY IMPAIRED VISITORS



A botanical garden, optometric association, and university students collaborated to develop multisensory nature experiences for visually impaired visitors. Students received dual training in sightguiding and plant interpretation. Three participants engaged in a tactile plant tour and aromatic herb workshop. Interviews revealed that plant survival strategies inspired resilience—one participant, previously resistant to outdoor activities after vision loss, described the experience as "opening a window" in her mind. Follow-up two and a half years later showed lasting effects required ongoing social support. This project demonstrates how botanical gardens can advance mental well-being for visually impaired communities through professionally supported, multisensory engagement.

Visual impairment affects over 2.2 billion people globally (World Health Organization, 2019), with depression affecting approximately 25% of this population—nearly three times the rate among sighted individuals (van der Aa et al., 2015; Parravano et al., 2021). Beyond sight loss, visual impairment can trigger functional decline affecting mobility, social interaction, and occupational capacity, frequently leading to loneliness and diminished motivation for life engagement, whereby psychological distress can undermine rehabilitation outcomes (Demmin & Silverstein 2020).

Above: Shady Garden (Fairy Lake Botanical Garden)

*Botanical gardens can serve as therapeutic environments, shifting from "helping blind people enjoy nature" to "using nature as a medium for psychological recovery".*

Despite this burden, evidence-based interventions addressing the mental health needs of visually impaired populations remain limited. As an ophthalmologist noted: "Psychological recovery is the prerequisite for all vision rehabilitation—without psychological well-being, there is no sense of security, no desire to engage with life" (Ping Liang, Shenzhen Eye Hospital). Vision rehabilitation aims to restore "functional vision"—not visual acuity, but the capacity to navigate the world using residual vision combined with other senses.

Botanical gardens, with their sensory richness, safety, and tranquillity, offer a promising yet underexplored setting for promoting psychological recovery. This article describes a multi-sensory program at Fairy Lake Botanical Garden and reports findings from post-activity interviews and follow-up assessments, focusing on how nature-based experiences can cultivate psychological resilience.

Plants offer diverse tactile, olfactory, and auditory stimuli, enabling multi-sensory engagement that compensates for visual loss. Unlike animals, plants remain stationary, allowing safe, self-paced exploration. Crucially, shady plants' survival strategies—adapting to shade, drought, or harsh conditions - offer powerful metaphors for human resilience, a narrative potential that distinguishes botanical gardens from other therapeutic settings. This aligns with the "personal growth" dimension of psychological well-being (Ryff, 1989).

Three visually impaired individuals (one female, two males; aged 26 to over 55) participated in the multi-sensory activities, recruited through the Shenzhen Optometric Association. All met national blindness criteria (Level 1 or 2), with varied visual histories; one congenital, one childhood-onset, and one adult-onset. Student volunteers received pre-event and on-site training from the Visual Cognition and Visual Rehabilitation department of Shenzhen Eye Hospital, covering professional foundational skills such as sighted guides and communication techniques with visually impaired individuals. They also received plant interpretation training from Fairy Lake Botanical Garden.

The activity comprised two stages. Stage 1 was an outdoor sensory tour in the Shade Garden, where plants with distinctive textures—ferns, begonias, mosses—were chosen for tactile stimulation (Trojanowska, 2014). Stage 2 was an indoor smell and taste workshop using aromatic and medicinal plants—mint, fish mint, mugwort—selected for their sensory potency and cultural resonance with the upcoming Dragon Boat Festival.



*Begonia masoniana* is used in multi-sensory activities due to the unique texture of its leaf (Fairy Lake Botanical Garden)

*"Psychological recovery is the prerequisite for all vision rehabilitation–without psychological well-being, there is no sense of security, no desire to engage with life."*
***Ping Liang, Shenzhen Eye Hospital***



Student volunteers received plant interpretation training from Fairy Lake Botanical Garden (Hongjuan Dai)



Post-activity face-to-face interviews were conducted with all three participants. Qualitative analysis revealed three themes: life resilience through botanical metaphors, cognitive growth and durability of effects, and social engagement.

For the first theme, the most striking finding was how participants drew parallels between plant survival strategies and their own lives. When a guide explained how shade plants evolve strategies to survive in competitive rainforest environments, one participant (Min) was visibly moved: “Humans are just like plants—no matter how badly life treats us, we always find our way out.” This moment—where botanical knowledge became a mirror for personal struggle—represents the programme’s most distinctive contribution, offering a non-clinical pathway for participants to reflect on their own resilience. This resonates with Bell and Foley’s (2021) observation that nature experiences are embedded within the emotional transitions of sight loss, where meaningful engagement with the non-human world can open new emotional horizons.

For the second theme, all participants reported gaining new knowledge. Yao, who had previously visited the garden only for hiking, noted he could now “be a guide for friends and family.” Min developed an interest in growing medicinal plants, Dong considered keeping a small pot of clubmoss as a companion. These outcomes reflect continued personal growth (Ryff, 1989).

For theme three, participants demonstrated active social engagement—sharing stories, asking questions, contrasting this experience with previous activities that were “just sitting around chatting, which was quite boring.” The interactive format fostered spontaneous participation and enhanced self-confidence.

Follow-up interviews conducted approximately two and a half years post-activity revealed a spectrum of lasting effects. Min, who retained visual memories of plants from before her vision loss, had become deeply resistant to outdoor activities after losing her sight, recalling: “I can't see. Why bother going?” The activity, however, “opened a window” in her mind. She discovered she could still access information and connect with others through non-visual senses. She reported the deepest transformation: she began growing perilla and mint at home and transferred the sensory inquiry methods learned during the activity into family interactions—asking her daughter about leaf shapes and flower colours when walking together, prompting her daughter to spontaneously describe plants over time. She retained the plant resilience metaphor as a personal motto.

Student volunteers received pre-event training covering professional foundational skills with visually impaired individuals from the Visual Cognition and Visual Rehabilitation department of Shenzhen Eye Hospital (Hongjuan Dai)

## REFERENCES

Bell, S.L. and Foley, R. (2021) 'A(nother) time for nature? Situating non-human nature experiences within the emotional transitions of sight loss', *Social Science & Medicine*, 276, 113867.

Demmin, D.L. and Silverstein, S.M. (2020) ‘Visual impairment and mental health: unmet needs and treatment options’, *Clinical Ophthalmology*, 14, pp. 4229–4251.

Parravano, M., Petri, D., Maurutto, E. et al. (2021) ‘Association between visual impairment and depression in patients attending eye clinics: A meta-analysis', *JAMA Ophthalmology*, 139(7), pp. 753–761.

Ryff, C. D. (1989) ‘Happiness is everything, or is it? Explorations on the meaning of psychological well-being', Journal of *Personality and Social Psychology*, 57(6), pp. 1069–1081.

Trojanowska, M. (2014) ‘Sensory gardens inclusively designed for visually impaired users’, . *PhD Interdisciplinary Journal.*

van der Aa, H.P.A., van Rens, G.H.M.B., Comijs, H.C., Bosmans, J.E., Deelman, B.G. and van Nispen, R.M.A. (2015) ‘Major depressive and anxiety disorders in visually impaired older adults’, *Investigative Ophthalmology & Visual Science*, 56(2), pp. 849–854.

World Health Organization, (2019) ‘*World report on vision*’, Geneva: World Health Organization, Licence: CC BY-NC-SA 3.0 IGO. Available at: https://iris.who.int/handle/10665/328717 (Accessed: 11 September 2026).

Zajadacz, A.M. and Lubarska, A. (2019) ‘Sensory gardens in the context of promoting well-being of people with visual impairments in the outdoor sites’, *International Journal of Spa and Wellness*, 2(1), pp. 3–17.

Yao, who lost his sight gradually after age fifteen and retained childhood knowledge of medicinal plants, experienced the activity primarily as activation of prior knowledge. He described being in nature as "opening the heart" compared to feeling "like a cage" indoors. However, when he returned to the botanical garden with others after the activity, no one was available to interpret the plants. He "just visited at the flower exhibition" without the guided engagement that had made the original experience meaningful.

Dong, congenitally blind, retained the strongest impression of participatory embodiment. He still recalled it as his "first experience of truly feeling something firsthand" and spontaneously contrasted it with other training programmes: "They just have you walk over, take a photo, check in, and leave—no sense of participation." While specific plant names faded, the tactile memory of textured leaves remained vivid.

Crucially, all three participants still required social scaffolding for nature engagement. None had returned to the botanical garden independently. Min compensated by transferring interpretive methods to family interactions, Yao and Dong lacked this compensatory strategy. This finding directly supports Bell and Foley's (2021) argument that social support is not an adjunct to naturebased experiences but a prerequisite for their translation into daily life practice.

The finding that participants spontaneously drew parallels between plant survival strategies and their own lives highlights a contribution that other settings cannot easily replicate. The metaphorical power of living organisms adapting and thriving in adversity offers an experiential pathway to psychological insight. This aligns with Zajadacz and Lubarska's (2019) findings on sensory gardens as spaces promoting well-being through embodied, multi-sensory engagement.

However, the follow-up findings also caution against treating nature exposure as a prescriptive intervention. A single multi-sensory experience, however impactful, did not produce uniform outcomes. Min's deeper transformation reflected an interaction between the activity and her personal conditions such as prior visual memories, family support, and a reflective disposition. Yao and Dong experienced meaningful but more contained benefits that did not extend into independent nature practice without ongoing social support.

This programme demonstrates the potential that botanical gardens can serve as therapeutic environments where multi-sensory engagement with plants fosters psychological resilience among visually impaired individuals—shifting from "helping blind people enjoy nature" to "using nature as a medium for psychological recovery". The spontaneous resonance between plant survival strategies and participants' personal resilience narratives highlights this distinctive capacity.

Follow-up findings indicate that while a single experience can plant seeds of resilience, sustained engagement requires ongoing social scaffolding. Implementation challenges like geographic distance, limited participant availability, and a small, relatively high-functioning sample constrain generalisability. For replication, we recommend dual volunteer training (sight-guiding and plant interpretation), safe routes, partnerships with visual impairment organisations, and targeting individuals in earlier stages of vision loss with objective measures.



One visually impaired participant touches the flower buds of Golden Flower Tea (*Camellia petelotii*) (Hongjuan Dai)

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Visually impaired participants attended the indoor smell and taste workshop using aromatic and medicinal plants (Shan Li)

**Author:** Sarah Tanke



# ROOTED IN BELONGING: THERAPEUTIC HORTICULTURE FOR COMMUNITY MENTAL HEALTH

At the North Carolina Botanical Garden, a partnership with the Farm at Penny Lane is demonstrating how therapeutic horticulture can help botanical gardens engage more meaningfully in community mental health and wellbeing. Through participant-centered, trauma-informed gardening experiences, adults living with severe and persistent mental illness have opportunities to cultivate plants while also cultivating relationships, purpose, self-confidence, and belonging. This article reflects on the successes and unique qualities of this partnership and considers what botanical gardens can contribute to community mental health through inclusive, nature-based public engagement.

Our mental health is deeply connected to the communities and environments in which we live. While clinical and behavioural health services play an essential role in supporting mental health, our wellbeing is also shaped by opportunities for meaningful activity, social connection, and participation in community life. For botanical gardens, this presents an opportunity to think beyond traditional programming and consider how our spaces, expertise, and partnerships might contribute to the broader health of our communities.

At the North Carolina Botanical Garden (NCBG) in Chapel Hill, NC, we have explored this possibility through a partnership with the Farm at Penny Lane (the Farm), a 40-acre therapeutic farm serving adults living with severe and persistent mental illness (SPMI). What makes this space special is that participants can access holistic programming outside of traditional inpatient or outpatient mental health care. They choose to be there, and they can find different entry points into community through cooking, art, music, therapeutic horticulture, and other intentionally designed programs.

Above: Participants weed and harvest alongside one another at the Farm (Sarah Tanke)

*We can teach people about plants, conserve biodiversity, and create beautiful places for people to visit, but we can also create intentional spaces where we directly impact the mental health and wellbeing of our communities.*

Since 2014, NCBG has facilitated a two-hour therapeutic horticulture group at the Farm every Monday morning, which runs throughout the entire year. Each group session begins with a check-in, giving participants space to share how they are doing and set intentions for the day. Sessions are designed to work toward shared mental health goals like building coping skills, practicing mindfulness, and developing self confidence. Those lessons are made real in the garden, where participants work in partnership with one another and with the land.

### Why therapeutic horticulture?

Several theories help explain why being in nature supports wellbeing. Stress Reduction Theory suggests natural environments can support recovery from psychological and physiological stress, while Attention Restoration Theory proposes nature can help restore directed attention and reduce mental fatigue (Ulrich 2024; Kaplan and Kaplan 1995; Kaplan 1995). Therapeutic horticulture then builds on these inherently therapeutic qualities by intentionally pairing the natural environment with activities designed around individual or group goals.

The benefits of therapeutic horticulture programs extend beyond the relationship between people and nature. They also create organic opportunities for people to form social connections, which adds another dimension to why these programs may be particularly well suited to support mental health. Relational Regulation Theory suggests that people regulate emotions and wellbeing not only through explicit conversations about stress or coping, but through ordinary, meaningful interactions and shared experiences (Lakey and Orehek 2011). On the Farm, participants connect while planting, harvesting, or simply weeding alongside one another. The activity gives participants something to do together, allowing relationships to develop without requiring mental health to be the focus of the interaction.

### Lessons from the Farm

Our experience at the Farm has shaped our understanding of the role gardens and natural spaces can play in supporting community mental health. While the garden serves as the venue for the impact we can have, intentional programming is the true driver of change. As we continue to refine and improve our therapeutic horticulture program at the Farm, the following three principles have become our guide.

- Centering the participant

  Creating meaningful experiences in the garden requires flexibility, humility, and a recognition that there is no “right” way to participate. Trauma-informed care is an approach that recognizes how traumatic experiences can influence the ways people interact with their environments, relationships, and activities. Rather than assuming what participants need, a trauma-informed approach prioritizes safety, choice, and empowerment, creating environments where participants have opportunities for predictability and control over how they participate.

  We have learned to create multiple entry points to engage with an activity and adapt programming in response to each unique participant. Accessibility is not only about whether someone can physically enter the garden, but whether they can meaningfully participate once they are there. Sometimes the most impactful results come from creating small adaptations or giving someone the opportunity to choose how they participate. While seemingly small, these considerations can help create a space where participants feel respected, supported, and able to engage in ways that work for them.



Participants partake in an abundant sweet potato harvest at the Farm (Sarah Tanke)

*Accessibility is not only about whether someone can physically enter the garden, but whether they can meaningfully participate once they are there.*

*The garden serves as the venue for the impact we can have, but intentional programming is the true driver of change.*



Two participants sow seeds in the high tunnel at the Farm at Penny Lane (Sarah Tanke)



- Valuing lived experience and community partnerships

  While we may have the perfect natural setting and a well-thought-out plan, our contribution is only one part of creating meaningful outcomes for participants. Successful programming depends on bringing together different forms of knowledge and expertise. NCBG brings therapeutic horticulture training, the Farm brings mental health resources and deep knowledge of the community it serves, and participants bring valuable lived experience.

  Rather than assuming we have all of the answers, we can listen, ask for feedback, and allow programs to evolve. The goal isn't just to bring a program into a community, but to build it alongside the people and organizations who know that community best.

- Fostering belonging

  Over time, belonging has become an increasingly important factor in understanding what makes the Farm meaningful to participants. Adults living with SPMI can experience significant social isolation and stigma. Creating opportunities to participate in community life therefore requires more than simply providing access to a space. Participants need opportunities to contribute, develop relationships, and experience themselves as valued members of a group.

  At the Farm, this might mean caring for a shared crop or teaching another participant something they learned. The work they are doing at the Farm is contributing to a shared environment that they and others care about. Over time, this shared space becomes something participants have helped create and can care for, rather than simply a place where they come to receive a program.

A participant transplants kale into the field alongside the farm manager (Sarah Tanke)

*The goal isn't just to bring a program into a community, but to build it alongside the people and organizations who know that community best.*



Decorated flags with encouraging messages adorn the entryway into the Farm (Sarah Tanke)

### Growing a more connected future

Our experience at the Farm has encouraged us to reconsider what botanical gardens can offer their communities. We can teach people about plants, conserve biodiversity, and create beautiful places for people to visit, but we can also create intentional spaces where we directly impact the mental health and wellbeing of our communities.

For botanical gardens, this work can begin with questions about the impact we want to have in our communities. Who may be experiencing isolation, stigma, or barriers to participation? Which visitors and community members are not yet finding a sense of welcome or belonging in our spaces? What accessible programs do we already offer, and how might we adapt them to create more meaningful points of entry? Could a garden tour, volunteer opportunity, workshop, or gathering become more welcoming to people with different physical, sensory, social, or emotional needs?

There may also be partnerships we have been wanting to explore. Which local mental health providers, social service organizations, disability advocates, schools, cultural organizations, or community groups could help us better understand local needs? Who could help us use the garden as a gathering space for people who may not currently see it as a place for them?

We do not need to become mental health providers or create entirely new programs to begin. We can start by listening to our communities, inviting partners into conversations, examining who is and is not participating, and looking closely at the programs and spaces we already have. By letting community needs guide our work, we can build on existing relationships and resources to make our gardens a cornerstone of community health and wellbeing.



## REFERENCES


Kaplan, S. (1995) 'The restorative benefits of nature—toward an integrative framework' *Journal of Environmental Psycholology* 15, pp. 169–182. doi: 10.1016/0272-4944(95)90001-2.

Kaplan, R. and Kaplan, S. (1989) '*The Experience of Nature: A Psychological Perspective*'. Cambridge: Cambridge University Press.

Lakey, B. and Orehek, E. (2011) 'Relational regulation theory: a new approach to explain the link between perceived social support and mental health', *Psychological review*, 118(3), pp. 482–495. doi: 10.1037/a0023477.

Ulrich, R. S. (2023) 'Stress reduction theory' in Marchand, D., Pol, E. and Weiss, K. (eds.), *100 Key Concepts in Environmental Psychology* . New York, NY: Routledge, pp 143-146.


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Therapeutic horticulture participants check-in and share their intentions for the group (Emily Oglesby, North Carolina Botanical Garden)

**Author:** Lisa M.W. Eldred,

# GROWING WELLBEING: BOTANIC GARDENS AS CROSS-SECTOR CONVENERS



Public gardens are often valued as restorative places, but they can also serve as civic anchors where nature, arts, learning, volunteering, research and community life meet. In Colorado, Denver Botanic Gardens is helping form the Colorado Wellbeing Collaborative, an emerging effort to connect arts, culture, nature, recreation, health and community assets across the state. Building from a 2026 Arts & Health Convening, the Collaborative will focus first on shared language, asset visibility, evaluation and relationship-building. Its larger promise is transferable: gardens can help communities connect existing strengths into wider systems of wellbeing and belonging.

Plant science, robust collections, horticultural excellence and innovative programs bring visitors and class participants to Denver Botanic Gardens each year. Yet visitor studies and program evaluations consistently point to a more elemental motivation: people come to the Gardens for relaxation, restoration, and time with friends and family. Like many public gardens, Denver Botanic Gardens also offers programs that explicitly support health and wellbeing, including yoga, meditation, mindfulness walks, therapeutic horticulture, nature journaling, herbalism and art practices for processing grief.

But perhaps, at times, a garden's role as a place to gather in nature is enough. Denver Botanic Gardens does not only offer health and wellness programs; in a meaningful sense, the garden itself functions as a health and wellness program. It and gardens elsewhere are also part of a community's health infrastructure as a key part of the cultural sector. As Turk et al. observe, "garden, library and museum activities 'draw on social capital' through encouraging socialising and the building of social networks and reciprocal relationships, which can in turn contribute to positive health and wellbeing" (2020).



Above: Member Mornings offer time for personal connection
Top: Dance and music enliven the gardens during Evening al Fresco programs



This is where public gardens may have a distinctive civic role. They are not only green spaces, museums, classrooms, research institutions, event venues, volunteer hubs or cultural organizations; they are often all of these at once. Their interdisciplinary character allows them to bring together people and partners who may not otherwise see themselves as part of the same health and wellbeing ecosystem. A garden can bring a physician, artist, horticulturist, public-health researcher, recreation leader, elder-care provider, educator, volunteer coordinator and community advocate to a shared question: what conditions help individuals and communities thrive?

That question is especially important because Colorado is not starting from a blank slate. Across the state, organizations are already advancing respected work in arts and health, nature-based wellbeing, outdoor recreation, creative aging, therapeutic horticulture, public health innovation and social connection. The challenge is not a lack of activity. The challenge is that strong efforts often remain separated by sector, geography, funding stream, terminology and professional network. Left alone, successful organizations may continue to compete for attention and resources, while smaller rural and community-based organizations provide critical support without the visibility or infrastructure to extend their impact. Connected intentionally, these distinct strengths could become the basis for broader access, shared learning and systemic support.

Denver Botanic Gardens began exploring this possibility through the Colorado Arts & Health Convening, presented in March 2026 with state agency Colorado Creative Industries and support from the Colorado Health Foundation. The convening was a precursor rather than a finished framework. It brought together national and Colorado voices in arts, health, social prescribing and community practice, and it raised a question heard more than once in the related stakeholder workshop: who owns this work? The answer, increasingly, seemed to be no one—and everyone.



Above: Therapeutic horticulture programs support the physical and emotional wellbeing of all ages
Top: Steppe Garden at sunset

*"Nature, as part of our social and health infrastructure, may be an important part of the solutions that are needed to address loneliness"*

*The challenge is that strong efforts often remain separated by sector, geography, funding stream, terminology and professional network.*



Art and nature intersect in a plein air painting class

The emerging Colorado Wellbeing Collaborative builds from that premise. The effort is designed to bring together public gardens and other green spaces, healthcare and public health, universities and research partners, libraries and museums, public agencies, philanthropy, business, and community-based organizations. Rather than creating another health and wellness program, Denver Botanic Gardens is stepping in as an initial organizer and field-building anchor, using its role as a civic, scientific and cultural institution to help hold arts and nature together within a broader health and community wellbeing ecosystem. The Collaborative seeks to recognize, connect and strengthen the full landscape of arts, culture, nature, recreation, health and community assets across the state. One early output should be greater visibility for the many community assets already supporting health: a clearer map of places, practices, partners and local knowledge that residents, organizations, healthcare providers, funders and policymakers can understand and use.

Formal social prescribing mechanisms could become one pathway for expanded and collective impact, particularly where healthcare providers want to connect people with non-clinical community supports. But the opportunity is wider than referral and financial support. A statewide collaborative could increase public awareness, help communities identify nearby resources, expand access through existing outreach programs, support research and evaluation, clarify shared language and help funders see the collective value of work that is currently dispersed.

Evaluation and shared understanding will be early priorities. Academic partners such as the Colorado Resiliency Arts Lab at the University of Colorado School of Medicine and the Collective for Nature Immersion Science and Practice at Colorado State University already contribute research capacity to the state, but program leaders in gardens, museums, arts organizations and community settings also need shared tools for describing their work accurately to health, funding, policy and public audiences. Over time, common evaluation measures across programs and pilots could help demonstrate impact without diminishing the local relationships and distinctive practices that make this work meaningful.

## REFERENCES


Coll-Planas, L., Carbó-Cardeña, A., Jansson, A., Dostálová, V., Bartova, A., Rautiainen, L., Kolster, A., Masó-Aguado, M., Briones-Buixassa, L., Blancafort-Alias, S., Roqué-Figuls, M., Lavelle Sachs, A., Casajuana, C., Siebert, U., Rochau, U., Puntscher, S., Holmerová, I., Pitkala, K.H. and Litt, J.S. (2024) 'Nature-based social interventions to address loneliness among vulnerable populations: a common study protocol for three related randomized controlled trials in Barcelona, Helsinki, and Prague within the RECETAS European project', *BMC Public Health*, 24, 172. doi: 10.1186/s12889-02317547-x.

Turk, A., Mahtani, K.R., Tierney, S., Shaw, L., Webster, E., Meacock, T. and Roberts, N. (2020) 'Can gardens, libraries and museums improve wellbeing through social prescribing? A digest of current knowledge and engagement activities'. *Oxford: Centre for Evidence-Based Medicine*, University of Oxford.



Volunteers are an important community for connection

At this early stage, the Collaborative's first impact may not be a new program, but a stronger field: shared language, education, visible community assets, common evaluation practices, and relationships that make future pilots, funding and policy possible. Those forms of infrastructure can seem modest, but they are what allow individual programs to become part of a wider system. If successful, the Collaborative could help residents and providers find meaningful supports more easily, help smaller and rural organizations gain visibility, help funders understand collective value, and help Colorado move from scattered excellence toward coordinated access.

For Denver Botanic Gardens, this is not an effort to own the wellbeing field. It is an invitation to help organize a wider conversation. Gardens should be centered alongside parks, libraries, museums, arts organizations, recreation partners, healthcare systems, universities, public agencies and community groups. For public gardens internationally, the transferable lesson may be this: a garden with a scientific focus can and should be both a restorative place for the public and a gathering table for the sectors working to improve wellbeing. The next contribution is not simply to create more programs, but to help communities recognize, connect and strengthen the many places, practices and relationships that already help people thrive—and to make those assets visible enough to shape access, investment and public understanding.



New friends are made at Silent Disco Yoga




Cross-disciplinary conversation fosters connection at the Science-Art Symposium, Mechanisms of Change

All images (Scott Dressel-Martin, courtesy of Denver Botanic Gardens)

*One early output should be greater visibility for the many community assets already supporting health.*

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# PHYTOIMAGINARY SPACES: RESTORATIVE BOTANY FOR URBAN COMMUNITIES

At the Rio de Janeiro Botanical Garden (JBRJ), we promote community well-being by integrating traditional and scientific knowledge through our Thematic Collection of Medicinal Plants. Our approach emphasizes biocultural conservation, offering visitors a therapeutic connection with nature, rooted in Brazilian sociobiodiversity. By integrating ethnobotanical walks and interactive experiences, such as our Phytoimaginary Workshops, we combat urban isolation. These activities provide restorative green spaces and empower participants by valuing traditional knowledge and showing that preserving our living biocultural heritage is essential to promoting holistic health in urban environments.

Modern urban environments disconnect citizens from ecosystems, exacerbating public health challenges and "plant blindness," the cognitive inability to perceive or value plants. This imperception directly undermines biocultural conservation, an approach that recognises the intrinsic interdependence between biological diversity and human cultural heritage, including traditional knowledge and practices: we conserve only what we know, feel, and value (Krishnan, 2019). Consequently, contemporary botanical gardens must evolve from passive repositories to active therapeutic territories that safeguard both flora and their living human heritage (Maffi, 2007; Bridgewater, 2019).

The Rio de Janeiro Botanical Garden (JBRJ) addresses this challenge through its Thematic Collection of Medicinal Plants. This article explores “Phytoimaginary Space," an innovative structure that connects ethnobotanical research to the visual arts. We define "Phytoimaginaries" as dynamic constellations of knowledge, practices, and memories through which humans and plants co-produce images, narratives, affections, and ways of being. Translating plant morphology into art combats botanical misconceptions, preserves biocultural memory, and promotes the community's holistic well-being.



Above: Monotype on black paper highlighting the reticulated venation and leaf shape, as well as structural elements of a native species (*Dioscorea trifida* L.f., ‘cará-roxo’) from Brazil, used for hundreds of years in food and medicine (Campbell, B.) Top: Participants engage in the collaborative monotype process, applying eco-friendly paints to fresh medicinal plants (Fonseca-Kruel, V.)





Above: Monotype, using two overlapping medicinal species (*Justicia gendarussa* Burm.f. and *Argemone mexicana* L.), blue ink and black paper, displaying the various leaf margins and plant structures
Left: The collaborative 'living atlas' takes shape on an outdoor clothesline panel, creating a space for dialogue and the sharing of traditional knowledge (Fonseca-Kruel, V.)

### Methodology: Sensory walks and monotype interventions

The pilot workshop "Botanical Monotype: Art, Medicinal Plants and Ancestral Knowledge" was held on April 30, 2025, through a collaboration between UFMG ("Common Imagination" group) and ENBT/JBRJ ("Ethnobotany and Intercultural Dialogues in the Preservation of Knowledge and Practices of Socio-biodiversity" group). Structured in two sessions (morning for youth; afternoon for adults), the workshop applied a three-stage participatory methodology:

1. **Ethnobotanical Sensory Walk:** Active multi-sensory exploration (touch, smell, sight) of leaf textures, margins, and growth habits within the Collection.

2. **Monotype Printmaking:** Direct application of eco-friendly, water-based acrylic paints to fresh medicinal plant parts, pressing them onto paper to capture intricate biological textures without requiring prior artistic skills.

3. **Collective Dialogue:** Displaying the finished prints on an outdoor clothesline gallery, where participants shared oral histories, traditional remedies, and personal memories, creating an immediate public archive.

### Results: Deciphering the phytoimaginary and the 'living atlas'

Approximately 40 participants completed the workshop, producing a collection of monotypes that constituted a collaborative "living atlas" of the medicinal flora of the JBRJ. Tactile contact with various plant structures, such as the velvety leaves of *Plectranthus barbatus* Andrews, the aromatic blades of *Cymbopogon citratus* (DC.) Stapf, among others, allowed participants to translate plant morphology into detailed graphic representations.

This sensory immersion united art, education, and ethnobotany, raising awareness of traditional plant uses that are falling into disuse and highlighting the thin line between medicinal benefit and toxicity in some species. Examining the plants' characteristics encouraged reflection on healing practices, while also emphasising the caution needed in proper handling and preparation.

**Reflecting on the challenges:** Handling fresh plant material required precise time control to preserve leaf moisture and structural integrity for printing. Furthermore, communicating toxicity without compromising the playful nature of the activity required careful pedagogical mediation, especially with children, through age-appropriate analogies and attentive supervision.

*Modern urban environments are increasingly characterized by high density, concrete infrastructure, and a profound disconnect between citizens and natural ecosystems.*

## REFERENCES


Bridgewater, P. (2019) 'A critical perspective on the concept of biocultural diversity and its emerging role in nature and heritage conservation', *People and Nature*, 1(2), pp. 145-155.

Câmara-Leret, R. and Bascompte, J. (2021) 'Language extinction triggers the loss of unique medicinal knowledge', *Proceedings of the National Academy of Sciences*, 118(24), p.e2103335118.

Haraway, D. J. (2023) '*Ficar com o problema: fazer parentes no Chthuluceno*'. Tradução de Ana Luiza Braga. São Paulo: n-1 edições.

In this sense, artistic co-creation mitigated botanical imperceptibility, transforming passive observers into active visual investigators while promoting social cohesion and building bridges between scientific and traditional knowledge.

**Discussion**

The Phytoimaginary Workshop demonstrates that visual representations of plants carry symbolism and function. By using the plant itself as a printing matrix, the monotype technique translates physical contact into a sensory image, preserving materiality and integrating scientific knowledge, bodily experience, and artistic expression. This practice directly combats the invisibility of plants, fostering affective and imaginative relationships between humans and plants.

Furthermore, this collaborative methodology promotes biocultural conservation (Bridgewater, 2019; Levis et al., 2024) by positioning community members as co-creators of knowledge, rather than passive observers. Displaying personal narratives highlights the consonance between traditional and scientific knowledge (Câmara-Leret and Bascompte, 2021). Ultimately, this process transforms the plant from a passive object into an active partner, embodying a sympoetic "doingwith-nature" approach (Haraway, 2023).

**Conclusion: Botanical gardens as spaces of transformation and care**

This study demonstrates that botanical gardens can go beyond traditional *ex-situ* conservation, becoming active therapeutic territories for biocultural care and community well-being. By integrating ethnobotany with art, institutions democratize botanical science and offer restorative experiences that alleviate urban stress, cognitive fatigue, and social isolation. Furthermore, the collaborative "living atlas" shows that sharing oral memories about medicinal plants strengthens social cohesion, affective grounding, and emotional resilience. Thus, safeguarding biocultural heritage directly promotes holistic well-being, transforming botanical gardens into restorative landscapes where people not only observe plants but also encounter them, feel them, reconnect with them, and care for them.



Participants observe the collaborative exhibition. The outdoor display turns individual prints into a collective public archive (Fonseca-Kruel, V.)

## REFERENCES CONTINUED


Krishnan, S., Moreau, T., Kuehny, J., Novy, A., Greene, S.L. and Khoury, C.K. (2019) 'Resetting the table for people and plants: Botanic gardens and research organizations collaborate to address food and agricultural plant blindness', *Plants People Planet*, 1(3), pp. 157-163.

Levis, C., Flores, B.M., Campos-Silva, J.V., Peroni, N., Staal, A., Padgurschi, M.C.G., Dorshow, W., Moraes, B., Schmidt, M., Kuikuro, T.W., Kuikuro, H., Wauja, K., Kuikuro, K., Kuikuro, A., Fausto, C., Franchetto, B., Watling, J., Lima, H., Heckenberger, M. and Clement, C.R. (2024) 'Contributions of human cultures to biodiversity and ecosystem conservation', *Nature Ecology & Evolution* https://doi.org/10.1038/s41559-024-02356-1

Maffi, L. (2007) 'Biocultural diversity and sustainability', in Soskolne, C. L. et al. (eds.) *Sustaining Life on Earth: Biodiversity and Human Health*. Lanham: Lexington Books, pp. 267–278.

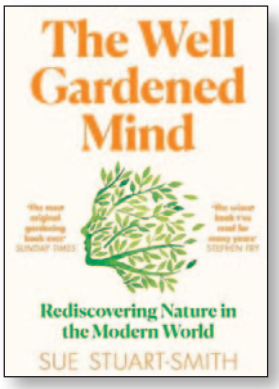

*Phytoimaginaries are ways of imagining, perceiving, and producing worlds through relationships between humans and plants.*

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# RESOURCES

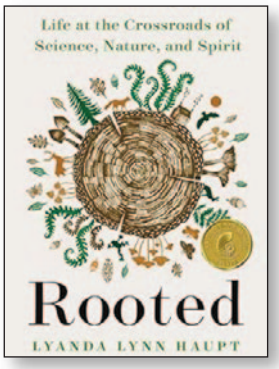



## BOOKS

**The Well-Gardened Mind: The Restorative Power of Nature** – Sue Stuart-Smith

Author Sue Stuart Smith, a psychiatrist and avid gardener writes about the healing effects of gardening and its ability to decrease stress and foster mental well-being in our everyday lives.

https://www.suestuartsmith.com/book




**Rooted: Life at the Crossroads of Science, Nature, and Spirit** – Lyanda Lynn Haupt

In Rooted, cutting-edge science supports a truth that poets, artists, mystics, and earth-based cultures across the world have proclaimed over life on this planet is radically interconnected. Our bodies, thoughts, minds, and spirits are affected by the whole of nature, and they affect this whole in return. In this Dme of crisis, how can we best live upon our imperiled, beloved earth?

https://www.goodreads.com/book/show/55277028




**Losing Eden: Why Our Minds Need the Wild** – Lucy Jones

A book about the relationship between the natural world and the human psyche; a wide-ranging inquiry into the mechanism by which contact with 'nature' is therapeutic.

https://www.penguin.co.uk/books/305463/losing-eden-by-jones-lucy/9780141992617

## TOOLKITS

**Green Social Prescribing Toolkit (2026 Update) - Green Social Prescribing Cross-Governmental Partnership**

The Green Social Prescribing Toolkit collates learning from the cross-Government Green Social Prescribing programme to help regional leaders set up successful Green Social Prescribing systems locally.

https://socialprescribingacademy.org.uk/what-is-social-prescribing/green-social-prescribing/green-toolkit/

**GreenUr: the Green Urban Spaces and Health Tool - World Health Organisation**

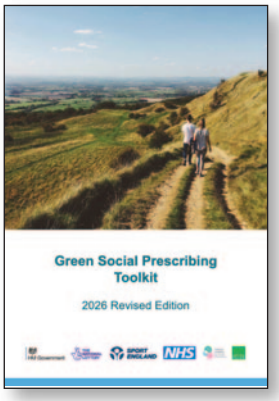
GreenUr, is a prototype tool to measure availability and accessibility of green spaces in cities and calculate their potential direct health effects – on mental health or mortality reduction. The tool is designed for local authorities, urban planners, nongovernmental organizations, students and researchers, but can also serve as an educational, communication and scientific support.

https://www.who.int/europe/tools-and-toolkits/greenur--the-green-urban-spaces-and-health-tool

**Health and Wellbeing Garden Workbook – American Public Gardens Association**

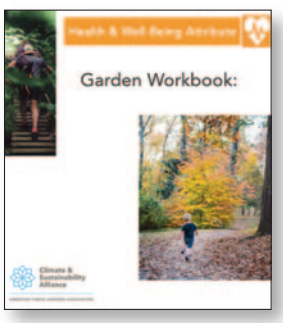
As part of APGA's Public Gardens Sustainability Index, this document lists the Goals and KPIs that have been identified as standards for gardens to better address health and wellbeing in their policy and practice.

https://members.publicgardens.org/wp-content/uploads/2023/09/health-wellbeing.pdf









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# SAVE THE DATE!

## The 11th International Congress on Education in Botanic Gardens will take place in Leiden, the Netherlands on 3-7 July 2028, hosted by BGCI member Hortus Botanicus Leiden.

This event will be combined with the 9th Global Botanic Garden Congress, with both events taking place at the same time. We hope this will lead to a diverse range of talks and delegates and showcase the important role that education plays across botanic gardens and their activities.

We can't wait to see you there!




More information to follow:
**https://www.bgci.org/our-work/sharing-knowledge-and-resources/bgci-congresses/bgci-education-congresses/**

# CONTRIBUTE TO THE NEXT ISSUE OF ROOTS




The next issue of Roots will focus on youth and climate. Young people are already shaping conversations and action on climate change, and botanic gardens and arboreta can play an important role in supporting their learning, participation and leadership.

Do you have a project or programme you would like to share? Have you developed climate education activities with young people, created opportunities for them to take part in conservation or climate action, or worked with youth groups to explore local climate challenges? How is your garden engaging young people and helping them connect with nature and build a more sustainable future?

To contribute, please send a 100 word abstract to **annelies.andringa-davis@bgci.org** by January 15 2027.