20 GREEN CARE AND OCCUPATIONAL THERAPY

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INTRODUCTION

The term *green care* describes a variety of health and social care interventions that intentionally harness nature in their approaches. The word *green* in this context, therefore, refers to using the natural green environment as a context for human occupation. It should not be confused with other uses such as in *green politics* or being *environmentally friendly*, for example; although there are overlaps as this chapter will show.

There are many different types of green care intervention, including horticulture-based approaches, care farming animal assisted interventions, facilitated green exercise, and wilderness therapy (see Fig. 20-1); each of which has its own pedagogy, recognized practices and processes.

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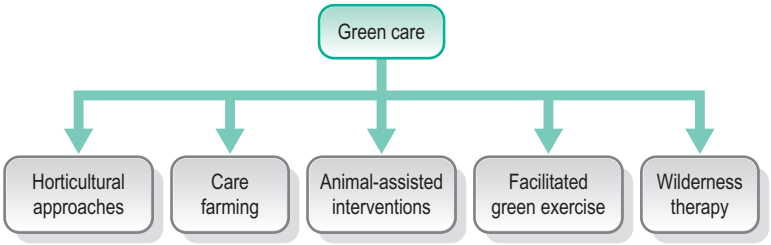

FIGURE 20-1 ■ An overview of the main intervention types comprising green care.

In green care, nature is an integral component of an active intervention and not merely a pleasant backdrop to care (Haubenhofer et al. 2010; Sempik et al. 2010). This distinguishes green care from passive encounters with nature, such as when sitting in a garden, seeing a landscape view from a window or through the greening of the built environment. Furthermore, green care means designed, intentional, *occupation*-based therapeutic intervention, not just *being active* in natural settings. The distinction between certain nature-dependent phenomena that people experience as therapeutic and bona fide green care interventions is shown in Fig. 20-2.

Green Care and Occupational Therapy

Green care provides many opportunities for occupational therapists to use the natural green environment and the occupations associated with it in their practice. Many of the principles, theories and frameworks used in green care are derived directly or indirectly from occupational therapy or have a bearing on it, and many occupational therapists use green care approaches within their practice (perhaps even being unaware that green care exists and that they are a part of it). Therefore, there is a need to provide theoretical knowledge to many green care practitioners who have an occupational therapy background.

Chapter Aims and Structure

This chapter introduces specific green care interventions, describes their underpinning constructs and theories, grounds these within an occupational therapy framework to inspire practitioners' professional reasoning, and highlights the growing evidence-base for green care. The reader is also directed to further resources to explore certain issues in more depth. Woven throughout the chapter are five illustrative case studies derived from practice. They show how green care operates within contrasting health and/or social care contexts: a forensic inpatient unit, a day service, a therapeutic community, a care farm and a vocational rehabilitation social enterprise.

GREEN CARE INTERVENTIONS

Like occupational therapy, green care is a complex intervention (Sempik et al. 2010); its efficacy is multidimensional and based on a *synergy* between the service user, the occupation they engage in, and the natural green environment.

Horticulture-Based Approaches

From an international perspective, there is no consensus on terminology for either the practice of horticulture-based green care or for its practitioners. These terms are all used: *horticultural therapy*, *therapeutic horticulture*, *garden therapy*, *social and therapeutic horticulture*. The latter term has emerged recently (particularly in the UK) to describe participation, by a range of vulnerable people, in groups and communities whose activities are centred on horticulture and gardening, but which differs from domestic gardening because it is formally structured as an intervention (Sempik and Spurgeon 2006). This shift in terminology highlights the importance of the social context. It emphasizes that the overall efficacy of the intervention comprises restorative processes arising from the natural, green environment *and* from the social milieu created through collective participation (Haubenhofer et al. 2010). It underlines the value of social and therapeutic horticulture as a route into the social capital of communities. In several countries voluntary professional registers exist or are being created in order to professionalize and assure the quality of practice (see Fieldhouse and Sempik 2007), with an associated regulation of job titles.

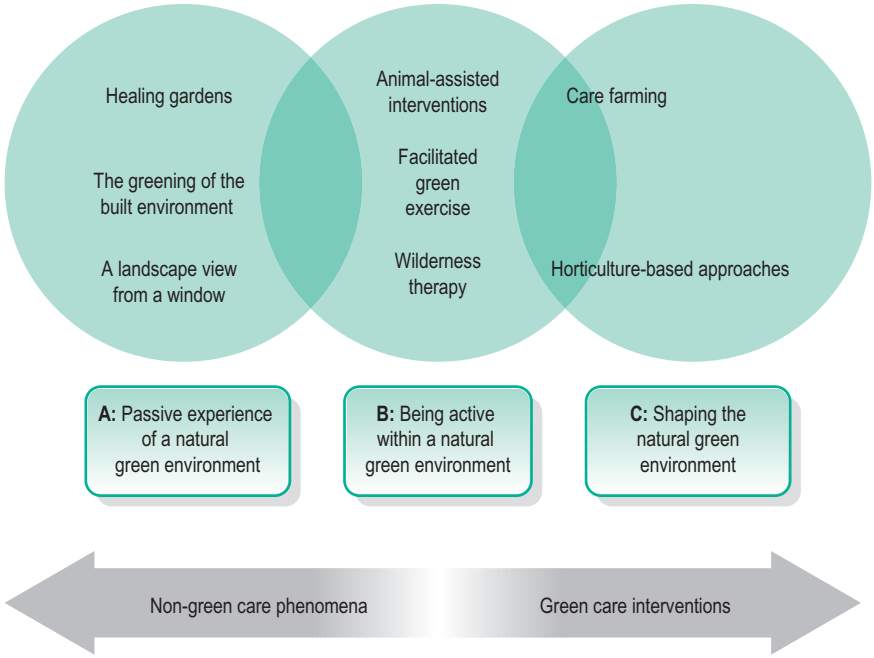

FIGURE 20-2 ■ Nature-based phenomena and their association with green care.

CASE STUDY 20-1

Green Care in a Forensic Inpatient Unit

Jan is an Occupational Therapy Horticulture Technician, serving acute and rehabilitation wards in a forensic unit. She works in small gardens attached to each ward, and in a larger occupational therapy garden, where vegetables, fruit and flowers are grown. The sessions are pre-booked and service users are risk-assessed and escorted by one or more members of staff. Jan's aims are to enable service users to build relationships, increase their sense of role and responsibility, and have opportunities to be creative and nurturing in a clinical environment that limits such opportunities. She also sees gardening as a leisure, training or vocational activity for individuals once discharged.

Neil is on an acute ward with a diagnosis of schizophrenia. He is highly aroused and thought disordered. He is unable to remain still and spends his time pacing the corridors. He is seen as a high risk in terms of violence and has been physically restrained frequently. He has access to 'outside' once every hour into a secured garden for a 15-minute smoking break. Neil is offered half an hour of gardening, as he is unable to attend other therapeutic activities. The use of metal tools, breakable plastics or toxic plant material (such as bulbs) is not permitted, so Jan engages Neil in planting up a container with summer bedding plants.

As the session starts, Neil speaks rapidly. He appears to be speaking through different personalities, and dances round the room. However, when Jan puts the plant material into his hands he stops, sits down and begins to focus on it. He talks about his experiences of gardening and handles the bedding plants with care. Although he needs to be drawn back to the task, he plants up the container, organizing colour and design, and choosing materials. By the end, he has produced something with which he is clearly pleased.

Care Farming

Care farming (also known as social farming or green care farming) is the use of commercial farms and agricultural landscapes to promote mental and physical health through ordinary farming activities (Hine et al. 2008). The notion of *multifunctionality* has been adopted by many care farmers, whereby farms serve at least two different functions through their usual activities – that is, agricultural production and health/social care. While activities may be tailored to the abilities of participants, there is no separate facility on the farm for the provision of care.

Care farms serve the needs of people with mental health problems, learning disabilities, addictions, dementia, and other challenges. There are different models, reflecting different national healthcare contexts (Haubenhofer et al. 2010).

Animal-Assisted Interventions

Animal-assisted therapy is a therapist-directed intervention evaluated in relation to specific therapeutic goals (Berget and Braastad 2008), while *animal-assisted interventions* refer to a more generalized approach using livestock, for example, within a care farming context (Kruger and Serpell 2006; Sempik et al. 2010).

The rationale for these approaches is that caring for an animal, responding to its needs and learning to communicate with it develops psychological wellbeing and self-esteem. Animals show affection in response to the attention they receive and are not judgemental (Katcher 2000). A randomized controlled study by Berget et al. (2008) showed that working with farm animals improved coping ability, self-efficacy, symptomatology and quality of life for participants diagnosed with schizophrenia, anxiety, mood and personality disorders.

Facilitated Green Exercise

'Green exercise is activity in the presence of nature' (Barton and Pretty 2010, p. 3947) and derives its efficacy from the synergistic benefits of physical activity and exposure to nature (Pretty et al. 2006). Walking, cycling, gardening and conservation are widely facilitated to address specific therapeutic goals. A meta-analysis of 10 UK green exercise studies showed that green exercise improved mood and self-esteem, with individuals with mental health problems showing one of the greatest changes for self-esteem (Barton and Pretty 2010). In the UK, MIND (2007) have argued that GP referral for facilitated green exercise sessions could be as effective as prescribing antidepressants for people with mild to moderate depression.

Wilderness Therapy

Wilderness (or nature therapy, or adventure therapy) uses outdoor activities – such as rock-climbing or canoeing – in their natural settings to distance people from customary stressors and to create challenging situations with controlled risk for participants, whose experiential learning and self-reflection forms the basis of positive change (Hine et al. 2009).

Wilderness therapy can help individuals (often adolescents) with anxiety and depression and/or behavioural problems and can also improve trust and communication within families and groups. It can adopt a specifically psychotherapeutic approach based on the premise that wild nature evokes positive coping behaviours (rather than defensive ones) because of the risk involved, the immediacy of the consequences of one's actions, and through cooperation within one's peer group (Berman and Davis-Berman 1995; Itin 1995; both cited in Haubenhofer et al. 2010).

In addition to the five green care intervention-types described above, a brief overview of ecotherapy is provided. Ecotherapy is not, strictly speaking, a green care *intervention-type* but it is often discussed within a green care context.

Ecotherapy

Ecotherapy sees personal health and healing as being directly related to the health of the natural ecosystem of which humans are a part (Davis and Atkins 2009). Ecotherapy integrates health-promotion activities that serve individual, community and global goals (Burls 2007), highlighting that the natural world is an inextricable element of our community and social system, and that 'the mind-body-world web contains its own freely available healing potentials' (Buzzell and Chalquist 2009, p. 20).

In this sense, *ecotherapy* is not so much an intervention-type, as an approach to any or all green care interventions (Sempik and Bragg 2013). For example, Chalquist (2009) notes that, in addition to benefitting individuals, horticulture:

> *'helps the community too, particularly when it involves growing fruit and vegetables locally, thus decreasing dependency on chemically treated food products seized from exhausted, nitrate-singed soils and trucked or flown in from thousands of miles away.'*
>
> ***(p. 68)***

This macro-level perspective on human occupation and environmental degradation identifies ecotherapy as an ecological issue, overlapping with green politics and the sustainability agenda.

These diverse interventions are all underpinned by the natural green environment. What follows is an overview of how the human relationship with this environment has been conceptualized, and how these theories can inform occupational therapy.

GREEN CARE CONSTRUCTS AND THEORIES

The key constructs and theories associated with green care can be understood as conceptual *psycho-evolutionary perspectives* or a more empirical exploration of the *human relationship with the natural world*.

Psycho-Evolutionary Perspectives

The Biophilia Hypothesis

The biophilia hypothesis suggests that people have an innate desire to connect with nature and that this is strongly determined by survival instincts established early on in our species' evolution (Wilson 1984; Kellert and Wilson 1993). It sees this affinity as being integral to people's physical, psychological and social development. In short, it proposes that an attachment to the natural world is hard-wired into humans and is adaptive.

Particular aspects of personal development are associated with certain values that nature is seen to possess, such as:

1. *An aesthetic value* – whereby the beauty of nature fosters human curiosity, exploration, and adaptability
2. *A dominionistic value* – whereby mastery of nature and/or adversity builds self-esteem
3. *A humanistic value* – whereby a shared emotional attachment promotes trust, cooperation and sociability
4. *A moral value* – whereby an appreciation of the wholeness and integrity of the natural world generates feelings of harmony and belonging
5. *A naturalistic value* – whereby immersion in natural rhythms promotes mental acuity and physical fitness
6. *A negativistic (or resisting, questioning) value* – whereby a healthy respect, for the power of nature and the sense of wonder it fosters, promotes positive attitudes to fear, risk-taking and self-management
7. *A symbolic value* – whereby the figurative and metaphorical significance of natural objects, processes and rhythms encourages greater understanding of one's own life
8. *A utilitarian value* – whereby one's dependence on nature's finite material resources is appreciated, as food, for example.

(Kellert and Derr 1998; cited in Burls 2007).

The utilitarian value underpins the human ethic of nature conservation and care for biodiversity and is at the core of an ecological perspective of life, as Shoemaker (1994) notes:

> *The green plant is fundamental to all other life. Humankind could perish from this planet and plants of all kinds would continue to grow and thrive. In contrast, the disappearance of plants would be accompanied by the disappearance of all animal life, including humankind.*
>
> ***(p. 3)***

The biophilia hypothesis also theorizes that humans attune to the condition of nearby animals and plants because it is a way of deriving information about their shared environment. An animal at rest signals wellbeing and safety, and this impression is then transmitted to the person. Similarly, healthy plants and flowers convey a relaxed feeling of being in a bountiful natural setting, beneficial for humans (Melson 2000; cited in Sempik et al. 2010).

An Overload and Arousal Perspective

It is estimated that in industrialized nations, people spend between 1% and 5% of their time outdoors; the lowest amount of time at any point in human history (Chalquist 2009). The health implications of this are

wide-ranging. Wilcock (2006) suggested that cultural values and norms are disconnecting people from the natural world that shaped our evolutionary path, so that modern life is less orientated to the older biopsychosocial capacities necessary for maintaining health. This offers fewer opportunities to recover from mental stress (Pretty et al. 2005). Modern living can subject people to a bombardment of sensory overstimulation that may lead to damaging levels of psychological and physiological arousal, whereas natural green environments that include plants contain patterns that reduce stress levels (Ulrich et al. 1991). This makes accessing the natural outdoors environment a potentially important issue for mental health service users, whose contact with nature may be limited by hospital admissions, urban living and/or low income.

Attention Restoration Theory

The most widely quoted theory in the context of green care (particularly in relation to horticultural interventions) is Attention Restoration Theory (Kaplan and Kaplan 1989; Kaplan 1995). It posits that natural environments offer respite from the mental fatigue that results from having to constantly inhibit competing influences when trying to direct one's attention towards a specific task. It argues that the presence of nature is inherently interesting or stimulating and requires no effort in order to engage with it, and describes this phenomenon as *fascination*.

Fascination has a positive impact on individuals' cognitive ability and restores the ability to focus attention. It is an essential feature of a *restorative environment*, which is said to comprise the following:

- *Fascination* – the ability to maintain attention effortlessly, so that directed attention can be rested and attentional fatigue eased
- *Being away* – the subjective sense of having escaped, or feeling removed (physically or conceptually) from situations that would normally be stressful, or place a burden on directed attention
- *Extent* – a sense that the environment is 'rich enough and coherent enough so that it constitutes a whole other world' (Kaplan 1995, p.173) which the individual can become immersed in
- *Compatibility* – the individual's inclinations to become active are matched by the opportunities for action which the environment affords. In other words, an individual may feel *inclined* to weed a patch of earth, or pick a ripe apple – which has obvious implications for their motivation.

Kaplan and Kaplan (2011) note how easily people are impaired by becoming overloaded with information. They use the term *reasonableness* to describe the kind of wellbeing derived from enhanced information-processing (including better concentration, greater capacity for reflection, and enhanced planning and problem-solving). They contrast this with the irritability, impulsiveness, impatience, distractibility and error-prone performance associated with attentional fatigue.

Occupational forms associated with green care (such as gardening, conservation work or bushcraft), which simultaneously foster fascination and offer a range of compatible activities, can promote instinctive engagement and enhance motivation. Studies consistently show people prefer environments where they anticipate they will be able to function effectively (Kaplan and Kaplan 2011). They respond unconsciously to cues for such environments, preferring those that have *coherence* (that is, they can be made sense of, have some degree of predictability, and are knowable) but which also have *complexity* (that is, they are alluring and offer the possibility that there is more to be learned). This is typified by the human attraction to 'the bend in the path' (Kaplan and Kaplan 2011, p. 312). This is explored more fully later as an occupational science phenomenon.

The Human Relationship With the Natural World

This section focuses on phenomena and constructs with an empirical basis, in that they are all drawn from close observation and inquiry into people's experiences, as they engage with the natural world. Such experiences may be considered as 'here and now' manifestations of the evolutionary viewpoints presented earlier.

Maller et al.'s (2002) systematic review of anecdotal, theoretical and empirical evidence showed that simple human contact with nature fostered recovery from mental fatigue, restored concentration, was recuperative, increased capacity to cope with stress, improved productivity and enhanced people's life satisfaction and general outlook on life. Chalquist's (2009)

CASE STUDY 20-2

Green Care Within a Day Service

Jo is an Occupational Therapy Horticulture Technician. Her weekly allotment gardening group is one of a network of community-based groups – *New Directions* – within an NHS support and recovery service. She has an annual budget (£100) to buy equipment and seeds and rents the allotment from the council for £40 per year. The NHS Trust indemnifies staff working in community-based venues on the basis of routine risk assessment. The group helps service users build their confidence and their social and employable skills.

Abby is diagnosed with depression and anxiety. She is often agitated and avoids social situations, spending much of her time at home in bed. On joining the allotment group, Abby is initially tearful and seeks out Jo to talk to, but as she engages in tasks, she becomes calmer and more reflective. She says the allotment work stops her ruminating on her problems, and helps her engage with group members. After a few months, Abby takes on her own plot so she can go more frequently and grow produce for her family.

Two years later, Abby tells Jo she has learned to accept help for the first time and now feels she has something worth offering people. She gains a Royal Horticultural Society Certificate in Horticulture at a local Further Education college and works with a local charity. Following discharge, Abby addresses over 100 people at a recovery conference, describing how the allotment group gave her hope that there was something inside her that was still alive and worth nurturing, when everything else in her life seemed dead. She now sources funds from *Rethink* (mental health charity) and is setting up a peer support group and often brings the group to her allotment. She also (by arrangement) visits the New Directions group occasionally, providing support to others.

overview of the research-based evidence for nature-based *interventions* underlines that reconnection with the natural world can impact on and alleviate anxiety, frustration, and depression – and bring a greater capacity for health, self-esteem, self-relatedness, social connectedness and joy.

What follows is an overview of some of the processes through which this kind of impact is seen to occur. The aim is to encourage thinking about how green care occupations can be translated into occupational therapy.

Sensory Processing

Sensory processing refers to the way messages from the senses are processed by the nervous system, so they can inform motor and behavioural responses (Dunn 2009). Individual differences will influence a person's *sensory diet*, the combination of preferred sensorimotor experiences that optimize individuals' functioning in a given environment. Green care settings offer a potentially rich, nourishing and varied sensory diet. Plants and flowers may be cultivated specifically for their shape, colour, scent and texture, for example in sensory gardens. Green care settings also encompass the visual appeal of landscape and light, outdoor smells and sensations (such as hearing birdsong) and a wide range of sensory experiences related to changing seasons and the weather. There are other sensations too, such as the feeling of excitement and exhilaration associated with a sense of adventure on taking positive risks and having fun.

Sensory-based approaches are particularly relevant in mental health practice. People living with schizophrenia may have sensory processing difficulties in processing motion, decoding facial information, and recognizing and conveying emotion in the voice, for example, which are likely to have a significant impact on social and vocational participation (Champagne and Frederick 2011). Similar sensory problems may arise for people living with dementia, or with a learning disability (see Ch. 26).

Information can be extracted quickly from natural green environments, enabling individuals to function effectively. Therefore, green care settings may be conducive to achieving a balance of sensory stimulation to promote optimal cognitive functioning (Dunn 2009; Kaplan and Kaplan 2011).

An essential therapeutic advantage of green care is that the physical act of doing – such as digging, sowing, weeding or watering – amplifies the existing cognitive benefits of simply being in a natural green environment through its sensory integrative function. The fact that rich sensory experiences are abundant, uncontrived and naturally integrated through occupation is crucial to green care outcomes.

Temporality

Green care activities heighten people's awareness of time in terms of seasonal change or daily rhythms (such as a regular time for milking the cows). Clark (1997) has called this *temporality*, suggesting that the pace of life not only bombards the senses but can dislocate the temporality of occupations, resulting in 'doing without being' (Clark 1997, p. 86), or a disconnection from self. Simo (2011) offers this perspective:

> *Gardening enables human beings to reconnect with nature and emerge from their immersion in a cyber-world dominated by the instrumental reasoning which orders people to fit the rational economy of its design and the consequent ethics of the machine society.*
>
> ***(p. 358)***

Green care can restore a sense of being, relocating an individual in relation to past and future events and developing awareness of the possibilities of the present time. This, in turn, orientates behaviour to the fulfilment of hopes, the formulation of goals, and the re-connection with (or reconstruction of) personal narratives.

Personal Narrative

Human beings instinctively strive for coherence and create narratives or stories in order to make sense of their lives (Mattingly and Fleming 1994; Hasselkus 2011; see also Ch. 17). The kinds of stories people create for themselves are important because stories shape behaviour. Individual narratives can emerge readily in natural green environments and can be shaped by metaphors of nurturing and growth drawn from the environment itself. For example, attention restoration theory suggests that an individual can pass through a succession of levels, or depths of experience, from clearing the head to reflection on personal issues and goals (Kaplan 1995). This reflective process, when combined with a connection to, and contemplation of, the natural world, can foster patience and optimism:

> *Horticultural therapists – individuals who put seeds in the ground and expect plants to emerge – are accustomed to operating with a full measure of hope.*
>
> ***(Schwebel 1993, p.11)***

This mirrors recovery-oriented practice (see Ch. 2), as green care may be regarded as a positive metaphor made real:

> *The garden is a metaphor for the process of recovery. During the winter months we must work hard although we do not see the results, in the hope that they will arrive in the spring.*
>
> ***(Simo 2011, p. 358)***

Spirituality

Existential crises are often associated with mental health problems, when individuals may question the meaning, purpose and value of life (Warner 2000; Koslander et al. 2009). Significantly, in the context of green care, people often express their feeling of being part of nature and having a purpose within it (Sempik et al. 2005, pp. 46–51). This suggests green care can promote spirituality, where spirituality is defined as the secular experience of finding meaning and purpose in life through absorption in occupations (Egan and Delaat 1994; Urbanowski and Vargo 1994; Howard and Howard 1997; Wilding et al. 2005). This spirituality is often associated with the 'presence or soul of place', as a facet of identity and finding oneself, a centre of belonging and kinship, and a focal point for stories, image and metaphor (Chalquist 2009, p. 70).

Gardens may also have a theist (religious) spiritual significance for some, such as older people (Heliker et al. 2000) and those experiencing life-limiting illness (Unruh et al. 2000; Unruh 2004). The evidence suggests that, for some people confronting their own mortality, natural spaces have a particular resonance by linking nature to creation and ultimately to a creator.

Flow

Flow experiences arise from a subjective psychological state characterized by enjoyment, self-motivation, and feelings of self-worth and competence (Czikszentmihalyi 1992; Emerson 1998). The self-motivating aspect of green care occupations (Kaplan and Kaplan 2011), combined with the resulting cognitive change, suggests green care occupations may be conducive to flow. Such experiences may be associated with exploration (see Kaplan and Kaplan's (2011) notion of complexity, described earlier), navigating between feeling skilful and feeling challenged (see Ch. 17).

During flow, absorption in doing (see spirituality) generates a strong sense of personal agency, and of an integrated self, and prompts a forgetting of worries or

negative thoughts (much like attention restoration) leading to increased happiness, self-esteem, work productivity, and life satisfaction (Wright 2004). So, in addition to new learning, it strengthens the identity of the learner and excludes competing thoughts that might obscure this. Like temporality, flow increases awareness of the present and thus has strong therapeutic potential.

Wright (2004) has noted that an occupation is likely to be most therapeutic when it has the full attention of the individual, can provide clear, immediate, unambiguous feedback, takes place in an uncontrived real-life environment, and occurs when the individual is in a relaxed state. Green care occupations can meet all these requirements.

Production

The care of animals and plants may attract and engage people for aesthetic reasons (Czikszentmihalyi and Rochberg-Halton 1981) but there is also the immediate appeal (related to survival) of growing food. Production or productivity (see Glossary) is integral to cultivation in green care and has many therapeutic applications. Taking home fresh food to share reinforces a provider role for individuals who may otherwise primarily be cared for, and opens up avenues for further exploration such as healthy eating and cooking. Harvesting produce collectively can become a symbolic means for a group to reinforce its own identity and the working partnerships that contributed to the end product:

> *Alex: I had those runner beans that me and you planted … and they were nice.*
>
> *(**Fieldhouse 2003**, **p. 293**)*

Green care occupations have many of the characteristics of work. They can enable participants to be productive, to develop skills and status, to have social contact and make friends, to transfer to paid employment (staff at projects are frequently drawn from former service users), and to develop structure in their daily lives. Added to this is the cultural ambiguity of many green care occupations, in that they may be regarded (and experienced) as therapy, leisure, a hobby, education, training, voluntary work, or employment – depending on the context.

On this basis, green care can provide a therapeutic milieu that is non-stigmatizing, inclusive, and acceptable. It can support individuals' recovery journeys by presenting an occupation (gardening or farming, for example) as a continuous pathway from occupational *therapy* towards ordinary mainstream *occupation*. The case examples in this chapter illustrate how green care can be adapted to different care settings to facilitate this journey.

CASE STUDY 20-3

Green Care at a Therapeutic Community

Alun is land manager for a therapeutic community, which is a registered care home for adults with a range of mental health problems. They live as residents and members of the community for up to two years as part of their care plan under the Care Programme Approach. Their stay is funded, in most cases, through local mental health trusts. The community lies within 20 acres of land, much of which is used for fruit, vegetable, and meat production. Working on the land is part of the life of the community; both in terms of the food produced and because the activities of production, cooking and preserving give structure to the community's day-to-day life. The natural landscape also inspires therapeutic activities such as painting, drawing, pottery, sculpture and crafts.

An appreciation of the land, as a central feature of the residents' environment and the source of their seasonal organic food, fosters a connection between the residents and the world around them. Residents may become involved in land, livestock and plant care, in groups or as individuals. This work is tailored to residents' needs but exists within the wider context of necessary tasks that are essential to the community's life.

Yakubu has a long history of psychosis and substance misuse. He enjoys living and working in the community because it helps him rediscover his identity and build up his interpersonal skills. He works on the land two mornings a week – helping with seasonal tasks such as wheel-barrowing compost, digging vegetable beds, planting out seedlings, weeding, watering and animal care. The physical exercise grounds him and helps him feels more alive, he says. His commitment to the community ensures he gets on with his work, even when he appears to be feeling low, and this new-found self-motivation has helped his recovery.

Production is important because it is a dimension of social inclusion (see Glossary). In green care, this involves acknowledging individual capacities and adapting occupations within a range of democratic projects, which are amenable to many different service models, such as social enterprises (Sempik 2010; Pollard 2011). This focus can shift the power dynamic of the service provider/service user relationship in positive ways (Wilson et al. 2010), thus fostering citizenship.

The Human Relationship with Plants and/or Animals

Green care is unique among therapeutic interventions, in that it creates relationships between people and other living things. The direct and obvious response of plants and animals to care or neglect provides immediate, non-judgemental reinforcement of an individual's sense of agency

> *In nature there are neither rewards nor punishments. There are consequences.*
>
> ***(Ingersoll, cited in Jiler 2006, p. 91)***

Furthermore, such relationships also offer non-discriminatory, non-threatening, positive returns for the carer without imposing the emotional burden of an inter*personal* relationship – which the individual may not want, or not yet feel ready for (Fieldhouse 2003). Some therapeutic applications derived from this close relationship are explored later.

A Totality of Experience

Green care offers a holistic experience which integrates a wide range of psychological social and physiological processes. A single green care experience could involve any or all of these, working together synergistically. To highlight any single process would be arbitrary given that the lived experience does not differentiate between them. Simo (2011) highlights this synergy eloquently:

> *It [gardening] enables the capacity of introspection, to connect with oneself as well as promoting a feeling of relaxation and wellbeing, developing motor skills as well as cognitive and affective … gardening is a social occupation that allows people who may have acquired a sick role and may feel socially excluded to adopt the new roles of carer and gardener. It is an aesthetic experience, a ritual of creation of beauty and life, which confers an artistic gaze or perspective on the participant, to work listening to the water falling, seeing the colours of the plants, smelling the scent of the flowers, touching the bark of the trees.*
>
> ***(p. 358)***

The natural green environment, the occupations it generates, and the relationships that emerge from collective participation are mutually reinforcing; operating as a coherent whole – referred to by MIND (2007) as a 'winning combination' (p. 7). The benefits of green care may be due to the totality of the experience; one that envelops people completely.

GROUNDING GREEN CARE PRINCIPLES WITHIN OCCUPATIONAL THERAPY

There are many ways in which green care and occupational therapy are interwoven. There is much shared history, a common link with occupational science, frequent close working relations between practitioners, and a grounding in person–environment–occupation models of practice. Furthermore, there are extensive opportunities for shared professional reasoning around the applicability of therapeutic approaches and practical skills, such as group work. Each of these will now be examined in turn.

A Shared History

Historically, there has been a strong connection between green care and occupational therapy. Observing the improved outcomes for patients who worked in the market gardens and farms of the old psychiatric asylums was a formative influence on the emerging occupational therapy profession in the UK (see Ch. 1). These institutions were often located in natural landscapes because this was presumed to be recuperative (Wilson et al. 2010), albeit away from society. Significantly, these resources were not replicated in the move from institutional to community-based care that has been unfolding in the UK since the 1970s (Leff 2001). However, arguably, as a response to the acknowledged shortcomings of community care, they are now re-appearing as an intervention for the same service user groups as before (MIND 2007).

Occupational Science and Green Care

Occupational science is discussed in Chapter 3, offering theories to inform practice including green care. Biophilia falls within the domain of occupational science because it shapes human occupations and has been consistently adaptive for our species over evolutionary time. Psycho-evolutionary perspectives emphasize how change at a human genetic level is much slower than the transformation of our society and lifestyle; 'our genes do not change so quickly' (Cox 1995, p. 36). Consequently, we are drawn to natural environments resembling the ones we evolved within, on the basis of their perceived restorativeness (Wilcock 1995; Kaplan and Kaplan 2011).

Early humans, endowed with an enlarged brain – an *occupational* brain (Wilcock 1995) – and faced with an environment that could sustain or threaten survival, developed the capacity to analyse situations and make decisions about the prospect of food, water and shelter (Lewis 1994). This history is partly responsible for our present-day attraction to savannah-like vegetation (Balling and Falk 1982; cited in Relf 1998) and to certain tree shapes (Orians 1986; cited in Relf 1998). Kaplan and Kaplan (2011) underline how humans still show strong preferences for natural environments with, for example, a 'brightly lit area that is partially obscured by foreground vegetation' (p. 311) and the presence of water and/or trees.

The impact of the phenomena presented earlier (such as temporality, narrative, spirituality and flow) are, arguably, underpinned by Wilcock's (2007) notion that $d + b^3 =$ *survival and health*; where d is *doing* and b^3 refers to *being*, *becoming* and *belonging*. Wilcock (2007) suggested that *doing* (where it involves a sense of *being* in a real world of passing time and physical space) can foster in an individual, a sense of their own capacity for self-transformation (*becoming*), and can therefore connect individuals with their sense of self, with their community and with their culture (*belonging*). Wilcock's theory acknowledges the evolutionary and ecological dimensions of green care's processes and how these anchor and reinforce a sense of being. It underlines, for example, that an ongoing personal narrative is simultaneously being reviewed, lived and unfolded forwards into the future.

Practice Partnerships

While an occupational therapist offers a unique depth of understanding of people's occupational challenges (understood from physiological, psychological and sociological viewpoints), and of strategies to transform occupations such as gardening (through activity analysis, for example) into a therapeutic experience, there are a number of benefits to be derived from collaboration with green care practitioners. Their approaches can blend, yet their respective skill sets are sufficiently different that each can benefit from the other's specialism. For example, a social and therapeutic horticulture practitioner has a unique technical knowledge of horticulture and additional skills in therapeutic applications, group dynamics, garden design, and project management which can extend the scope of projects throughout the year with gardening work (such as winter crops) and horticulture-related art and craft activities (linked to cultural festivals, perhaps) including cooking, poetry or photography, for example.

For the green care practitioner, the advantages of collaboration may include a greater awareness of activity analysis, occupation-focused outcome measures and occupational therapy professional reasoning, including using models of practice.

Applying Occupational Therapy Models of Practice to Green Care

Green care shares with occupational therapy an acute awareness of the influential role of the environment as a context for performance, and an appreciation of the therapeutic power of engagement with the environment through occupations.

Within occupational therapy, the term *environment* has a particular resonance. It comprises the physical, social, cultural, economic and political features of a person's context that have an impact on the motivation, organization and performance of their occupations (Kielhofner 2008). It is a multifaceted phenomenon and green care operates across all of these facets. For example, farming and gardening activities lend themselves to being carried out within a social milieu and are implicitly valued by those social groups and by society at large.

A significant example of cross-pollination between green care and occupational therapy is the

adoption of an occupational therapy model – the Person-Environment-Occupation-Performance Model (PEOP) (Baum and Christiansen 2005) – by an international group of green care practitioners to develop a European conceptual framework for green care (Sempik et al. 2010). This was used to conceptualize the dynamic relationship between the service user, the natural environment, occupation, and performance. Clearly, the connection between green care and occupational therapy is not just a practical one, but a conceptual one too. Occupational therapists can bring the changing perspectives on this dynamic person–environment–occupation relationship into their green care practice.

Turpin and Iwama (2010) have noted a conceptual shift within occupational therapy models, away from a notion of *mastery* of the environment and towards a greater appreciation of *participation* within it. This shift widens the therapist's focus on the *service user* to include families, groups, communities, organizations and populations. It accommodates a *socioecological* model of health; one that emphasizes the complete interconnectedness of the person and their environment and concentrates attention on the very close person–environment–occupation fit at the heart of green care interventions.

A socioecological model endorses green care as a total experience, because of the natural, uncontrived, interconnectedness of its component parts. Interventions can be focused on the person, the environment or the occupation, because change in one area will stimulate change in the others. This offers multiple starting points and pathways for promoting change when working with individuals who have complex and/or enduring needs, thus highlighting green care's versatility. A socioecological model also supports innovative practice by forging links with a wider sphere of practice partners such as farmers, gardeners, landscape designers, human geographers, architects, town-planners and public health agencies. This has been called for widely within green care (Barton and Pretty 2010; Haubenhofer et al. 2010) and within occupational science (Wilcock 2006). It encourages thinking about how green care might serve contemporary inter-agency agendas of community development, health promotion, social inclusion and recovery.

CASE STUDY 20-4

Green Care on a Care Farm

Paul runs a commercial mixed arable and dairy farm that engages people who are recovering from serious mental health problems, providing a structured working environment and training in organic agriculture and horticulture. Paul (like many care farmers) feels committed to organic food production and compassionate animal care. He sees the health of the land, the quality of the food produced, and people's health and wellbeing and sense of community as a natural whole.

Service users are referred and funded by social services. Paul employs three staff with expertise in education, training and psychotherapy. They provide support for around 20 people who work on the farm for up to 3 days a week. The care farm is also well known in the local community, and enjoys the support of several retired volunteers, most of whom previously worked in education or healthcare.

The average length of placement is around 2.5 years, by which time service users are at a stage in their recovery when they feel able to move on – either to employment, training or other goals or activities that had been interrupted by their mental health problems.

John is typical of many former service users when he says that working on the farm has boosted his self-esteem and self-confidence through acquiring new skills, making new friends and being part of a mutually supportive team. He is no longer a 'patient' but a 'farmer'. His bipolar difficulties had caused him to lose his job but John is now back at work as an architect and feels part of society again. Being in the open air, watching things grow and getting his hands dirty, says John, gave him the space to reflect on his strengths, what he wanted in life and where he really wanted to be.

Therapeutic Approaches Applicable in Green Care

Comparisons made between the therapeutic interpersonal relationship and qualities of the human relationship with plants and/or animals (see earlier) highlight the suitability of green care as a medium within which

various therapeutic approaches can be used *in situ* – that is, in the natural green environment, beyond their traditional clinical settings (Schwebel 1993; Unruh et al. 2000; Grut 2003; Chalquist 2009; Haubenhofer et al. 2010).

A Cognitive-Behavioural Approach

A cognitive-behavioural approach harnesses an individual's ability to acknowledge the automatic connection between their thoughts and behaviour, to modify the relationship between these, and thus to bring about changes in performance (Duncan 2008; and see Ch. 15). As described earlier, green care can enhance an individual's capacity for reflection and offers much reinforcement of an individual's sense of personal agency. It can enable an individual to experience themselves differently and unlearn habitual patterns of thinking and doing.

A Humanistic Approach

The humanistic approach focuses on the individual's sense of self. It aims to reinforce a person's sense of agency and (by facilitating reflection on the experience of *being* that individual) to achieve greater congruence between the actual self (how one is) and the ideal self (how one would like to be) (Finlay 2004). It is implicitly about self-creation as people search for meaning in life and relates closely to aspects of personal narrative, spirituality and flow, as previously discussed.

A Psychodynamic Approach

Individuals often describe the emergence of strong feelings while working in natural, green environments. The latter stages of attention restoration include contemplation of accumulated matters on one's mind and of oneself in relation to these (Kaplan and Kaplan 1989; Kaplan 1995). In green care, these thoughts and feelings can become woven into an occupation that is a fundamental expression of care for living things. This can connect individuals with the fact of life, with growth, and with the broadest issues of oneness with a natural order and a life/death cycle, so it is understandable that psychodynamic processes (such as projection and transference) may flourish and generate positive intrapersonal change – as shown empirically by Unruh et al. (2000). Projective identification, when infused with positive natural metaphors and social coherence associated with green care, can lead to a strengthening of a person's identity and attachments; generating an internalized sense of belonging in the world and within a social group.

For example, psychotherapist Jenny Grut (2003) harnesses the connectedness people feel with their allotment environment to address the painful and traumatic sense of loss experienced by victims of torture:

> *Nature provides a metaphor to help integrate all aspects of life. The psyche is reflected in nature. … This means we are in connection with a reality that reflects our inner landscape. We can see there, before us, what is happening inside us and when we realize this we become part of the vastness of nature and of the universe.*
>
> ***(p. 188)***

Group Work in Green Care

Many of the occupations associated with green care – such as horticulture, conservation, adventure and wilderness pursuits – occur in groups. Group work principles can be used to amplify the existing therapeutic potential of the green care activity, promoting social functioning and group cohesiveness. For example, Gonzalez et al. (2011) showed that, for a group of adults with depression, a horticulture group's effectiveness was related to group cohesiveness arising from horticultural as well as group psychotherapeutic factors. Group members' sense of shared experience – termed *universality* (Yalom and Leszcz 2005) – is an important therapeutic factor in group psychotherapy and has much in common with the humanistic implications of biophilia described earlier. The net result is that 'group cohesiveness serves beneficial change' (Gonzalez et al. 2011, p. 126). In other words, the group is the mechanism by which the green care is delivered *and* an active ingredient in the therapeutic process. There is a synergy, echoing the notion of a totality of experience (see also Chapter 16 on groups).

THE GROWING EVIDENCE BASE FOR GREEN CARE

Green care embraces many different interventions all of which are conducted with a range of service user groups, and each of which comprises a variety of activities. This presents any researcher with a complex challenge: a heterogeneous group of participants and

no standardized intervention. Hence, research methods such as randomized controlled trials (RCTs) are difficult to conduct. No large-scale trials of effectiveness have been carried out in this area. Researchers have therefore approached the issue of effectiveness, in many cases, by exploring the perceptions and feelings of service users, and understanding the reasons why they feel better as a result of green care. Thus, within green care, qualitative research methods have proved to be particularly useful.

The research output has increased substantially since the review by Sempik et al. (2003). A recent analysis by one of the authors (JS) of the bibliographic database *ArticleFirst* showed that the majority of research has explored horticulture-based approaches (44% of publications) and animal-assisted interventions (34% of publications).

Despite the challenges of such work, researchers have addressed the issue of effectiveness and there have been small number of controlled studies within green care. Studies have shown, for example, that animal-assisted therapy on a farm can increase individuals' self-efficacy (Berget et al. 2008) and reduce depression (Pedersen et al. 2012). Pedersen and colleagues also showed that different farming activities were associated with different levels of change in depression and anxiety scores. For example, more time spent milking the cows was associated with significantly lower levels of these; while time spent mucking out and cleaning was associated with significantly higher levels. This suggests that contact with the animals is important and that the benefits are not merely related to occupational engagement. While these studies are limited because of a low number of participants (and hence have low statistical power), they do show that RCTs can be used to study green care interventions and that effects can be noted through careful observation.

Gonzalez et al. (2009) showed a statistically significant fall in Beck Depression Inventory (BDI) scores for people with depression who received therapeutic horticulture. Gonzalez et al. (2010) also showed that therapeutic horticulture increased Attentional Function Index (AFI) scores, which are a measure of attention restoration, demonstrating a significant association between the changes in these scores and perceived levels of *being away* and *fascination* which are key components of restorative environments (see earlier).

The growing number of quantitative research findings within green care has enabled Annerstedt and Währborg (2011) to conduct a systematic review of controlled and observational studies of nature-assisted therapy, concluding that:

> *a rather small but reliable evidence base supports the effectiveness and appropriateness of NAT [Nature-assisted Therapy] as a relevant resource for public health. Significant improvements were found for varied outcomes in diverse diagnoses, spanning from obesity to schizophrenia. These findings highlight the importance of considering nature as an important resource in mental and public health care and the value of putting further efforts into research of this subject.*
>
> ***(Annerstedt and Wahrborg 2011, p. 385)***

Qualitative research has explored the views and perceptions of both service users and practitioners and has proposed mechanisms and frameworks for explaining the benefits of green care (Sempik et al. 2010). For example, Sempik et al. (2005) concluded that social and therapeutic horticulture projects promoted social inclusion through the dimensions proposed by Burchardt et al. (2002) of *production* (see earlier), *consumption*, *social interaction* and *political engagement*.

Research has also served to highlight the similarities between green care and therapeutic communities (Sempik 2008; Sempik et al. 2010, p. 54). Both approaches rely on creating cohesive communities that provide support and therapy through their group identity and activities. Some therapeutic communities are also green care communities (see Case study 20-3). For example, Hickey (2008) described the Lothlorien Therapeutic Community where cultivating the garden is an important part of the therapeutic process. Echoing the earlier descriptions of positive natural metaphors and personal narrative, he observed:

> *Residents often find metaphorical links between the garden and their own journey, with the garden offering readily available metaphors which reflect their inner process. One person found that there was a parallel between being part of the cycle of nature and her own life.*
>
> ***(Hickey 2008, p. 268)***

CASE STUDY 20-5

Green Care in a Vocational Rehabilitation Social Enterprise

Liz manages *New Blooms*, a social enterprise providing a supportive real work environment for people referred by local community mental health and learning disability teams. The project has 20 trainees who attend for 1–3 days per week to develop their work skills, self-esteem and social contact, and to forge a path into mainstream employment, education or training. Staff include horticulturalists, florists and support workers all of whom train and accredit City and Guilds and National Proficiency Test Council qualifications.

With the increasing awareness of air miles associated with cut flowers, *New Blooms* caters for a niche market, devoting its 4-acre rural site to the cultivation of organically grown English country cottage flowers which are sold at farmers markets, to individuals and businesses, and through a weddings and events service. Each commercial task can be accomplished by most people, whatever their skill-level – from seed sowing, to planting, watering or picking – which means trainees are fully involved in the business. The large volume of flowers produced means the work involves much repetition, so skills and confidence grow quickly.

The project has become a focus for social cohesion locally. Liz is overwhelmed with offers from local people who want to help with cultivation or with markets; and the financial viability of the business has enabled *New Blooms* to recruit five of its staff from former trainees, modelling inclusive employment to local businesses.

Hamzah left his job as contracts manager in a construction business following depression, which left him feeling anxious, isolated, housebound and despondent. After a busy summer in the flower nursery, he embarked on a National Vocational Qualification (Level 2) in Amenity Horticulture. This involved work placements in local parks and gardens arranged with the council. He later gained employment as a Horticultural Support Worker with *New Blooms* and now draws on his own experience to help trainees.

Hence, research into green care has addressed the subject from a number of different viewpoints – using quantitative (Gonzalez et al. 2009) and qualitative approaches (Sempik et al. 2005), through the exploration of personal experiences (Unruh 2004), and through the creation of models and frameworks (Sempik et al. 2010; Sempik and Adevi 2013). The research findings contribute to a growing and coherent evidence base, characterized by a notable rarity of potentially disconfirming studies (Chalquist 2009), which has helped green care to become established.

SUMMARY

This chapter has presented the natural green environment as an integral component of therapy with many proven benefits. It has explored green care on the premise that a cross-pollination of theoretical and practical ideas between occupational therapy and green care will be mutually beneficial.

It is important to remember, however, that green care is not a panacea for all problems nor will it be suitable for everyone. The notion of compatibility, or the personal inclination to engage with a natural green environment (as described earlier in relation to attention restoration theory), is important in understanding the impact of green care. However, from another perspective, when considering who attends green care projects, it may also be regarded as a kind of selection bias. Those individuals who participate in green care have chosen to do so and, importantly, they have usually committed a significant amount of effort and time to this endeavour. Consequently, it should be recognized that not everyone will find green care appealing. Some may simply not enjoy being outdoors, or getting their hands dirty, or dealing with the emotional impact of farm animals being sent to slaughter, or of plants dying. However, some individuals who are reluctant to engage with it in the first instance may subsequently find it enjoyable and beneficial. The occupational therapist should explore the preferences of the service user and guide them towards green care if they feel it is appropriate for them.

Green care is an emerging practice with ancient roots. Its potential is, as yet, largely untapped and its activities are still comparatively marginal within statutory health and social care services. It is hoped that this

chapter will encourage occupational therapists to discover and use green care, work closely with other green care practitioners, and evaluate, research and disseminate that work.

FURTHER READING

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A report from the European Cooperation in Science and Technology (COST) programme establishing a conceptual framework for green care.

MIND, 2007. Ecotherapy: The Green Agenda for Mental Health. MIND, London. Available at: http://www.mind.org.uk/assets/0000/2139/ecotherapy_executivesummary.pdf.

The executive summary of report by MIND (a UK mental health charity) calling for a new green agenda for mental health.

Townsend, M., Weerasuriya, R., 2010. Beyond Blue to Green. Deakin University, Australia. Available at: http://www.hphpcentral.com/wp-content/uploads/2010/09/beyondblue_togreen.pdf.

A report commissioned by Beyond Blue, the national depression initiative in Australia, which reviews existing Australian and international literature on the links between mental health and well-being and contact with nature, especially through green spaces.

USEFUL RESOURCES

There is a vast range of websites covering a wide diversity of green care topics. Below is a small selection, many of them national associations, which may be of interest and from which you can explore further links.

American Horticultural Therapy Association. www.ahta.org.

Association of Social and Therapeutic Horticulture Practitioners (ASTHP) in England, Wales and Northern Ireland. http://asthp.org.uk/.

Canadian Horticultural Therapy Association. www.chta.ca.

Care Farming UK. http://www.carefarminguk.org.uk/.

The Center of Anthrozoologys (Norway). http://azs.no/english.html.

Cultivate New South Wales (Australia). www.cultivatensw.org.au.

Gesellschaft für Gartenbau und Therapie (Society for Gardening and Therapy) a Germany-based organization. www.ggut.org.

Horticultural Therapy Association of Victoria (Australia). www.horticulturaltherapy.com.au.

Horticultural Therapy South Australia. www.htsa.org.au.

International Plant-People Interaction Resource Centre (University of Hawaii). http://www.ctahr.hawaii.edu/hih/therapy.asp.

Internationale Gesellsschaft Gartentherapie (International Society of Garden Therapy) – an umbrella body of organizations involved in horticultural therapy in Germany Switzerland and Austria. www.iggt.eu.

Plants for People – an international initiative, spreading knowledge of the benefits of plants in a working environment. http://www.plants-for-people.org/eng/aboutus/u.htm.

Schweizerische Gesellschaft Gartentherapie (Swiss Society for Garden Therapy). http://www.gartentherapie.ch/.

Society for Companion Animal Studies. http://www.scas.org.uk/.

Thrive – a UK charity working to help people living with a disability or mental health problem to transform their lives through gardening. http://www.thrive.org.uk/.

Trellis, Scotland – a charity supporting health through horticulture. www.trellisscotland.org.uk/.

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SERVICE USER COMMENTARY

As an employee of a peer-based mental health organization, this chapter confirmed the benefits we have witnessed through our organization's own 'green care' activities, and it provided me with a vocabulary that we can use as we develop our green programming. The overview of what comprises 'green care' was comprehensive and useful. It showed the wide range of activities and settings in which therapy can take place. While I was surprised to see livestock care included with gardening activities, it made sense once I considered how participants are asked not only to witness but to participate in the life cycle.

I am a service user who is not immediately drawn to green care activities, instead finding more satisfaction in the crafting of products; however, I have seen first-hand, the benefits of our organization's community garden, our greenhouse activities and our summer camping excursions. My peers have developed confidence, pride, camaraderie, inner peace and new skills through these activities. The annual summer harvest is a time for celebration, and the gardeners show pride in their success. The harvest provides opportunities to share skills in canning, preserving and food preparation. As mentioned in the chapter, these activities offer one a sense of purpose and insist on personal responsibility and commitment. They do lead to discussions about social responsibility and personal health.

In particular, I agree with the chapter's emphasis on the 'uncontrived setting' for therapy. As peers, we try to offer programmes that are not 'too programmed', activities which offer an opportunity for growth without being overtly didactic or scheduled. (Service users' time is already dictated by their medical, counselling and mental health appointments.) A garden influences the schedule and activities, not the programme manager, and the gardeners must self-organize to make sure its needs are met. For instance, without watering, the leaves will droop, and there will be no fruit. As described in the chapter in *Attention Restoration*, our gardeners become part of the decision-making on how much of their time is needed, and they choose how much to participate. They must learn to live with and respond to weather systems, learning that some decisions will never be in their hands. The garden space teaches coping skills, without anyone lecturing about it.

Absent in this chapter, however, was a discussion about creativity. It is touched on somewhat in the discussion about *Sensory processing*, but not fully. A community garden offers an ideal space to explore creativity. The plot itself has physical limits, but the garden is open to imagination during the planning stages, and it can be as simple or as ambitious as the gardeners wish it to be. It requires visualization.

The theories and constructs provided by the chapter's authors were successfully presented so that, as a layperson, I was able to understand and appreciate the perspective of the occupational therapist. The case studies were useful, although I wished for more specific details. The links to related organizations will be useful to many readers. All in all, it is a very good resource for anyone planning green care activities, whether they are occupational or horticultural therapists, recreation leaders or peers in mental healthcare.

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