Greenspaces; Cultivating the mind body and soul

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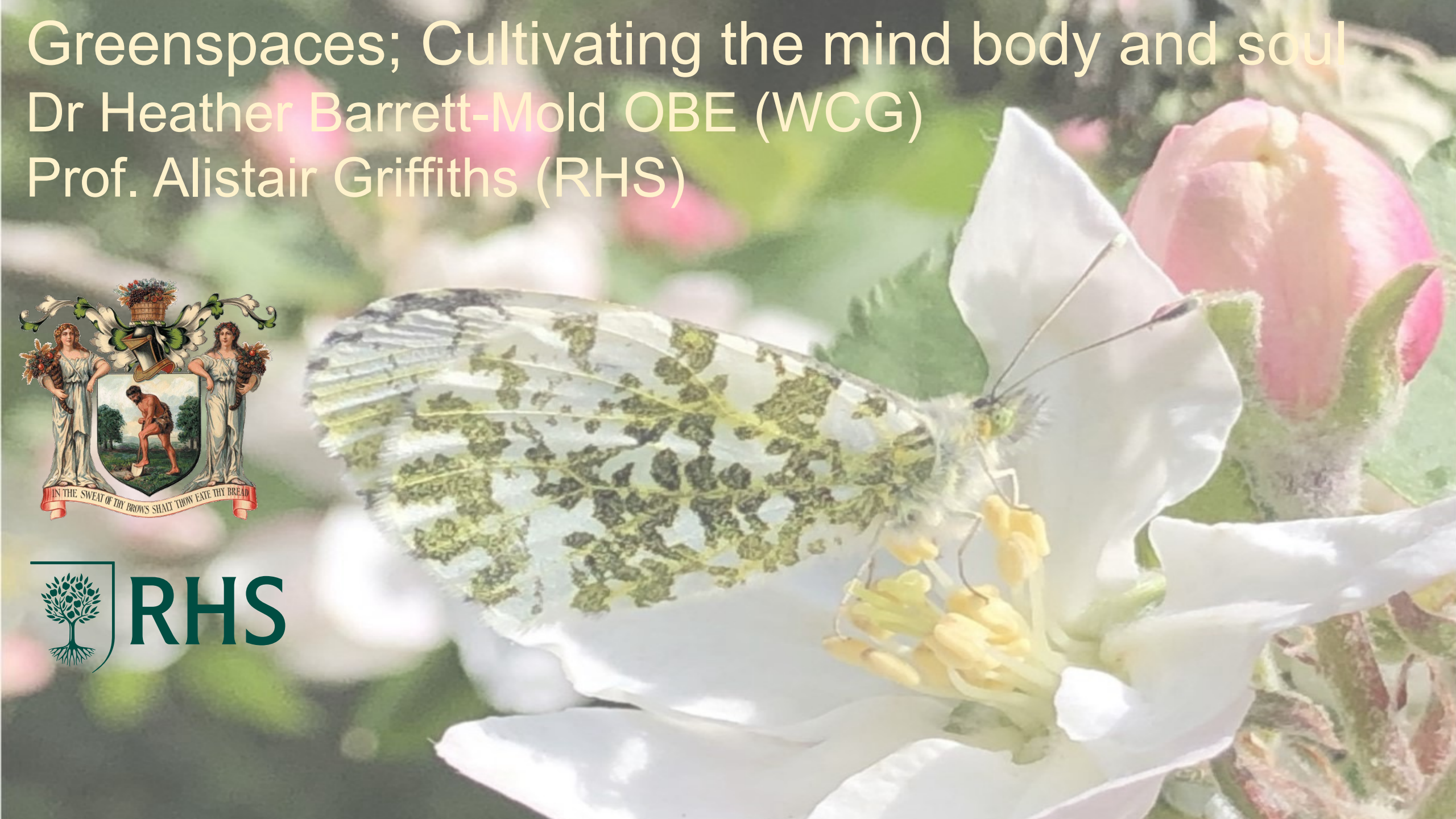

What is Horticulture

The Worshipful Company of Gardeners, first mentioned in City Corporation records in 1345, is a survivor from the medieval craft guilds

RHS

In 1605, after existing for centuries as a *mystery* or *fellowship*, the Guild was incorporated by Royal Charter. The Charter sets out the operations controlled by the Company:

"The trade, crafte or misterie of gardening, planting, grafting, setting, sowing, cutting, arboring, rocking, mounting, covering, fencing and removing of plants, herbes, seedes, fruites, trees, stocks, setts, and of contryving the conveyances to the same belonging..."

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Today we would define Horticulture as;

Horticulture is the science, technology, art and business of cultivating and using plants to improve human life. Horticulturists and Horticultural Scientists create global solutions for safe, sustainable, nutritious food and healthy, restorative and beautiful environments.

Cultivated Plant Services for Humankind

Humans use more different types of cultivated ornamental plants than any other plant types in the world!

Food
50,000 plants
FAO

Medicine
34,408 plants
Kew Database

Ornamental
81,000 plants
RHS Plant Finder

Number of UK Native Plant Species **1500** Stace 4th Edition (2021). New Flora of the British Isles

UK Gardens and Gardening

Residential gardens comprise

29.5%

of Great Britain's total urban area [5]

Number of UK gardeners

30 million

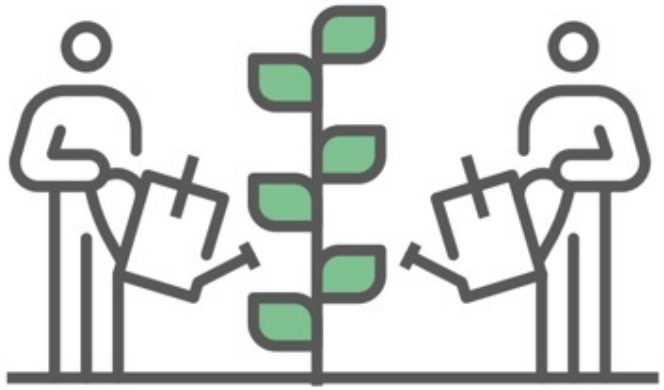
Total area of UK domestic gardens

700,000 hectares

(equivalent area of 93,000 professional football pitches) [4]

88%

of households in Great Britain had access to a private or shared garden during the Covid-19 lockdowns. [6]



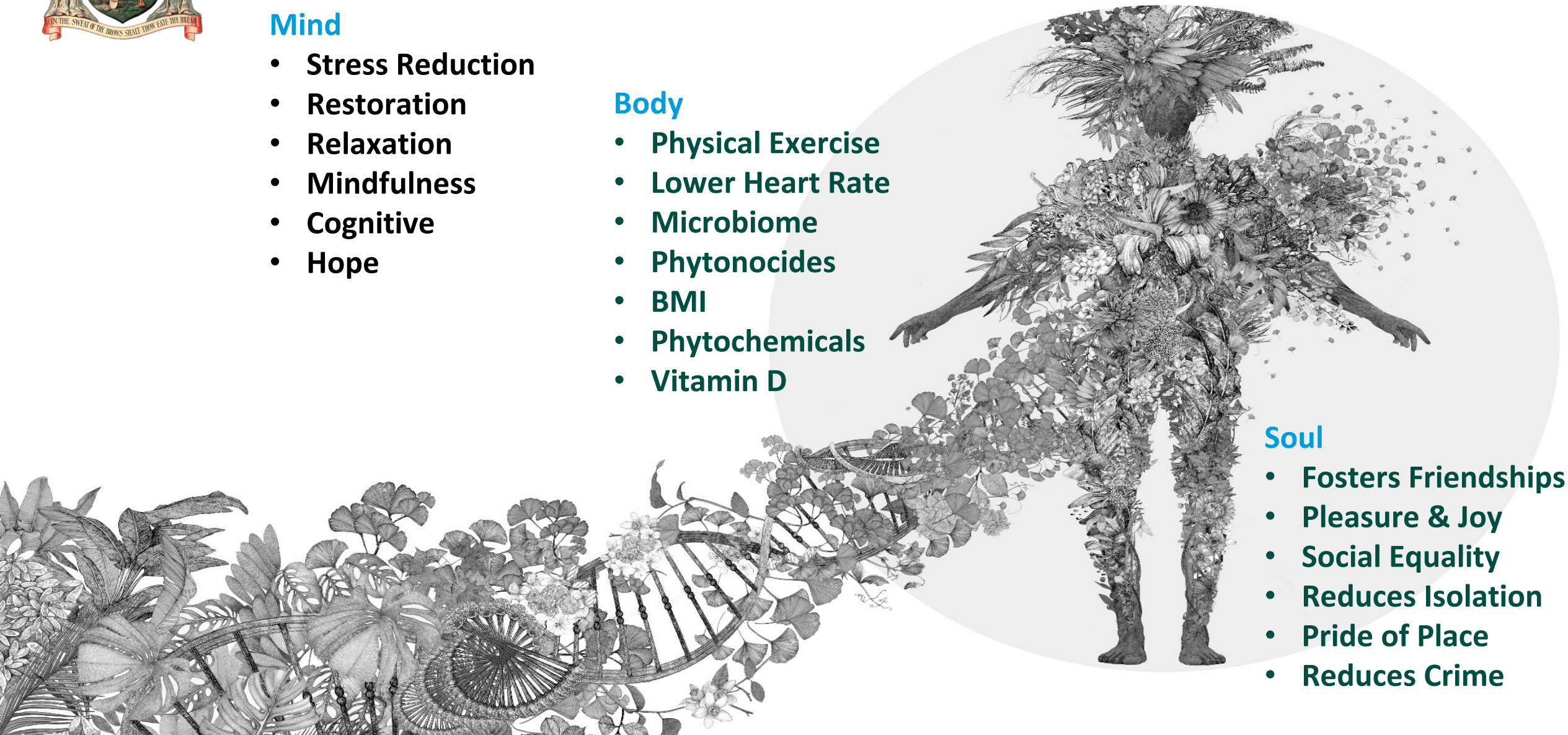
Growing Healthy Minds, Bodies & Souls

Mind

- Stress Reduction
- Restoration
- Relaxation
- Mindfulness
- Cognitive
- Hope

Body

- Physical Exercise
- Lower Heart Rate
- Microbiome
- Phytonocides
- BMI
- Phytochemicals
- Vitamin D



Soul

- Fosters Friendships
- Pleasure & Joy
- Social Equality
- Reduces Isolation
- Pride of Place
- Reduces Crime

Spending time in the garden is positively associated with health and wellbeing

MENE survey - English population (n = 7,814)

- Those gardening and using a garden reported better health and wellbeing, more physical activity, and more nature visits than those who did not.
- Compared to no garden access, access to a private garden was associated with better evaluative wellbeing,
- People with access to a private space such as a balcony, yard or patio were more likely to meet physical activity guidelines.

de Bell, S., White, M., Griffiths, A., et al. (2020). Spending time in the garden is positively associated with health and wellbeing: Results from a national survey in England. *Landscape and Urban Planning*, *200*, 103836

RHS

GREENER FRONT GARDENS REDUCE STRESS

6%
DECREASE IN PERCEIVED STRESS

Equivalent to 8 weekly mindfulness sessions, as measured after 6 months.

WILMA*, 86

> It's just nice to see the different colours. Otherwise, it looks dead bare
> It made me feel brighter in myself

53% AFTER

24% BEFORE

HEALTHIER CORTISOL PATTERNS

Steeper declines in diurnal salivary cortisol slopes indicate more effective regulation of circadian and hormonal mechanisms. This is a likely consequence of reduced stress

> It gives you pride, not just in your house but in the whole area

CHRIS*, 40

*NAMES CHANGED

Chalmin-Pui, L. S., Roe, J., Griffiths, A., Smyth, N., Heaton, T., Clayden, A., & Cameron, R. (2021). "It made me feel brighter in myself"- The health and well-being impacts of a residential front garden horticultural intervention. *Landscape and Urban Planning*, *205*.

Social Prescribing
RHS Bridgewater Garden Pilot Study

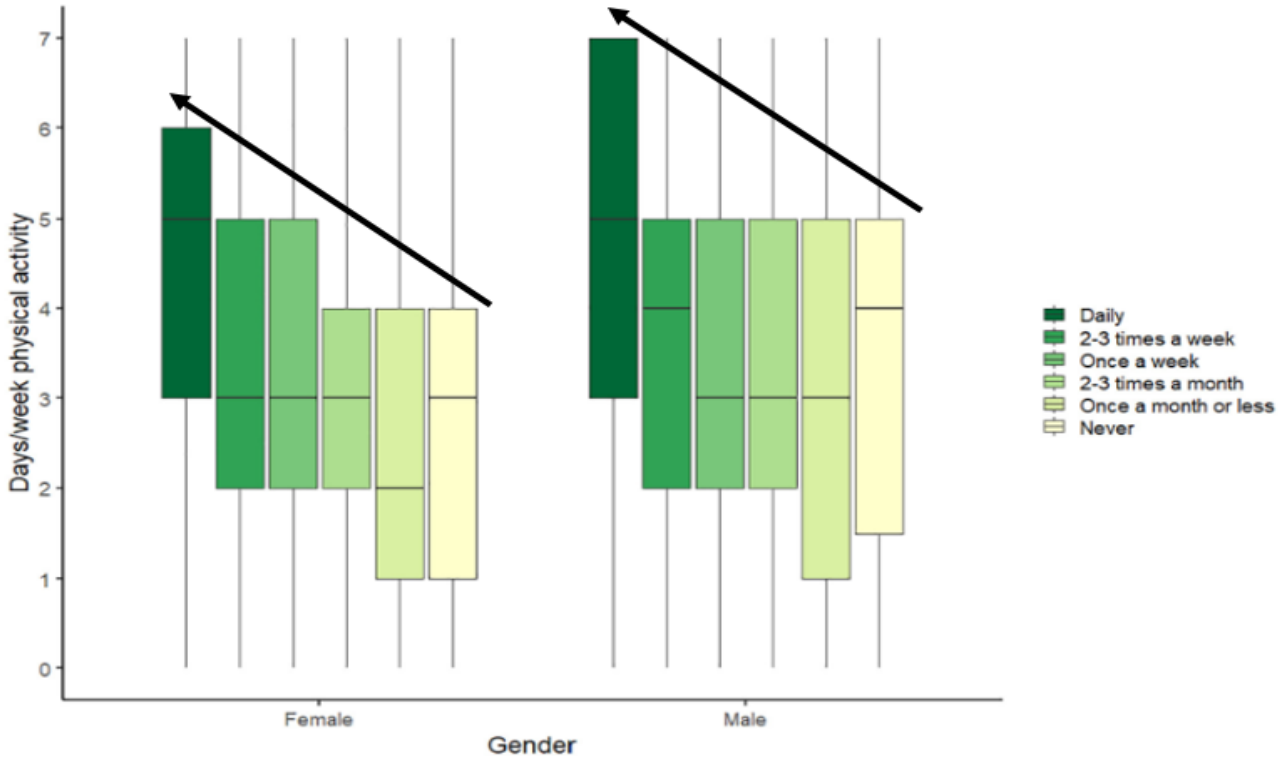
'It gets you out of the home, it gets you out on the road, it gets you to meet other people in a similar situation to yourself. Before you know where you are - you as an individual - you're improving, you're getting better.'

'I can honestly say, since coming here, I'm getting my mojo back. I'm cracking jokes, laughing, laughing at myself, having banter with the volunteers. I just love every minute of it. It's done me the world of good. I'd say it's saved me.'

Howarth, M., Griffiths, A., Silva, A., & Green, R. (2020). Social prescribing: A 'natural' community-based solution. *British Journal of Community Nursing*, *25*(6), 294–298.

Photo: RHS

Why garden? – Attitudes and the perceived health benefits of home gardening: Questionnaire 5766 gardeners and 249 non-gardeners



Number of days per week with moderate physical activity and frequency of gardening

Chalmin-Pui, L. S., Griffiths, A., Roe, J., Heaton, T., & Cameron, R. (2021). Why garden? – Attitudes and the perceived health benefits of home gardening. *Cities*, *112*, 103118.

Well Gardened Souls

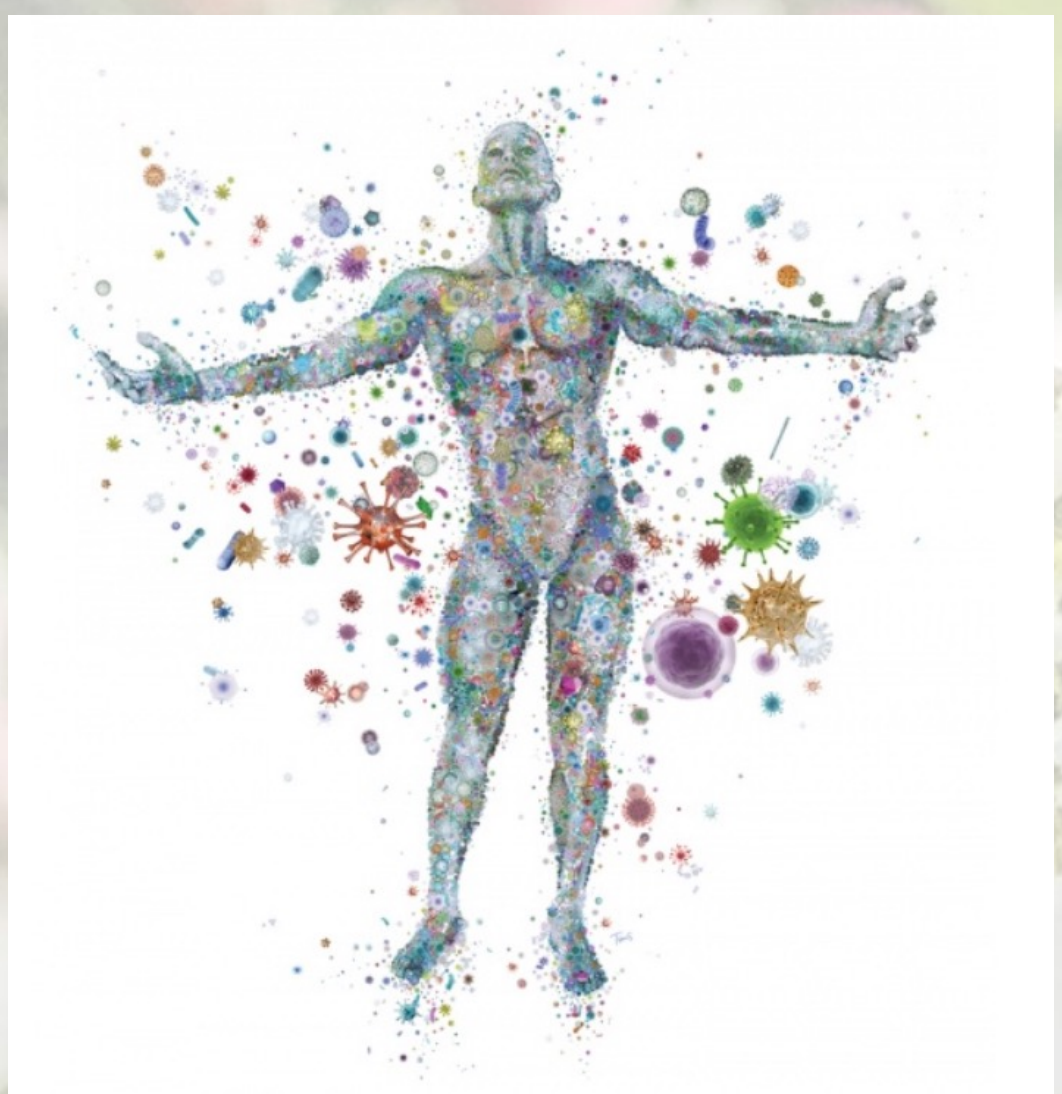
Foster social interactions & promote a sense of community (Genter et al., 2015; Lanier *et al.*, 2015;Seeland *et al.*, 2009;Kim&Kaplan, 2004)

Reconnect isolated people through plants and community gardening (RHS Britain in Bloom,2017, Wang & MacMillan, 2013)

Improve sense (and pride) of place (WHO, 2017; Lauriane *et al.,* 2021)

Reduce crime in disadvantaged neighbourhoods through provision of new green spaces (Kuo & Sullivan, 2001, Branas *et al.*, 2011; 2018, Chong *et al.,* 2013).

Human Microbiome



Roslund, M. I et al. (2020). Biodiversity intervention enhances immune regulation and health-associated commensal microbiota among daycare children. *Science Advances*, *6*(42), 1–11.

IRELAND
Brief Report COVID-19 Daily emotional well-being during the COVID-19 pandemic Lades *et al.,* 2020 British Journal of Health Psychology (2020), 25, 902–911

SCOTLAND
Home garden use during COVID-19: Associations with physical and mental wellbeing in older adults
Corley *et al.,* 2021 Journal of Environmental Psychology, 73.

UNITED KINGDOM
Time-use and mental health during the COVID-19 pandemic 55,204 adults.
Feifei Bu et al., 2020. University College London on-line

WALES
The role of perceived public and private green space COVID-19 outbreak
Wouter Poortinga et al., (2021). Landscape and Urban Planning 211 (2021) 104092

RHS

- Singapore
- Switzerland
- Chile
- Japan
- Philippines
- United Kingdom
- Australia
- Canada
- India
- Portugal
- Germany
- Italy
- Bulgaria
- Netherlands
- Caribbean and Pacific Islands
- United States of America
- The United Arab Emirates
- New Zealand
- And many more….

Horticulture and Landscaping (Human Habitat)
'A Health Right' like food and medicine Essential not 'A Nice to Have'

Plants as Pollution Busters

HAIRY LEAVES

Hairy leaves provide a larger surface area than smooth leaves and can capture particles on both sides. Particles (shown in red in the electron-microscope image above) are trapped in the spaces between the hairs. This stops particles being blown off and recirculated. Examples include cotoneaster (*Cotoneaster franchetii* and *C. coriaceus*) and flowering currant (*Ribes*).

COTONEASTER (*Cotoneaster franchetii*)

RED CEDAR (*Thuja plicata*)

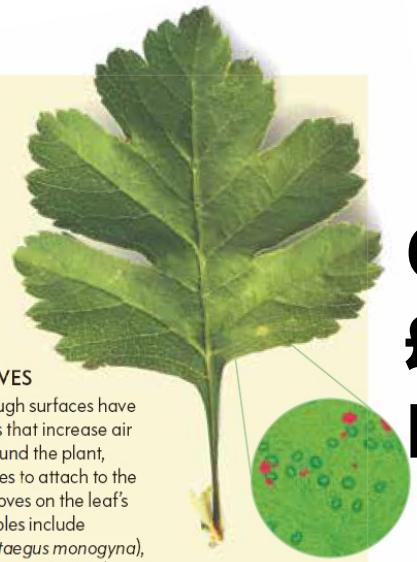
SCALY LEAVES

Plants with scale-like, short, overlapping leaves provide a rough surface that increases air turbulence around the plant and allows for greater deposits of particles. Particles are trapped in the scales and also in the waxy coating of the cuticle layer (the outer surface of the leaf). Examples include red cedar (*Thuja plicata*) and lemon cypress (*Cupressus macrocarpa* 'Goldcrest').

WAXY LEAVES

Particulates are trapped and embedded in the waxy cuticle layer that surrounds the leaves. Examples include yew (*Taxus baccata*), holly (*Ilex aquifolium*), and laurustinus (*Viburnum tinus*).

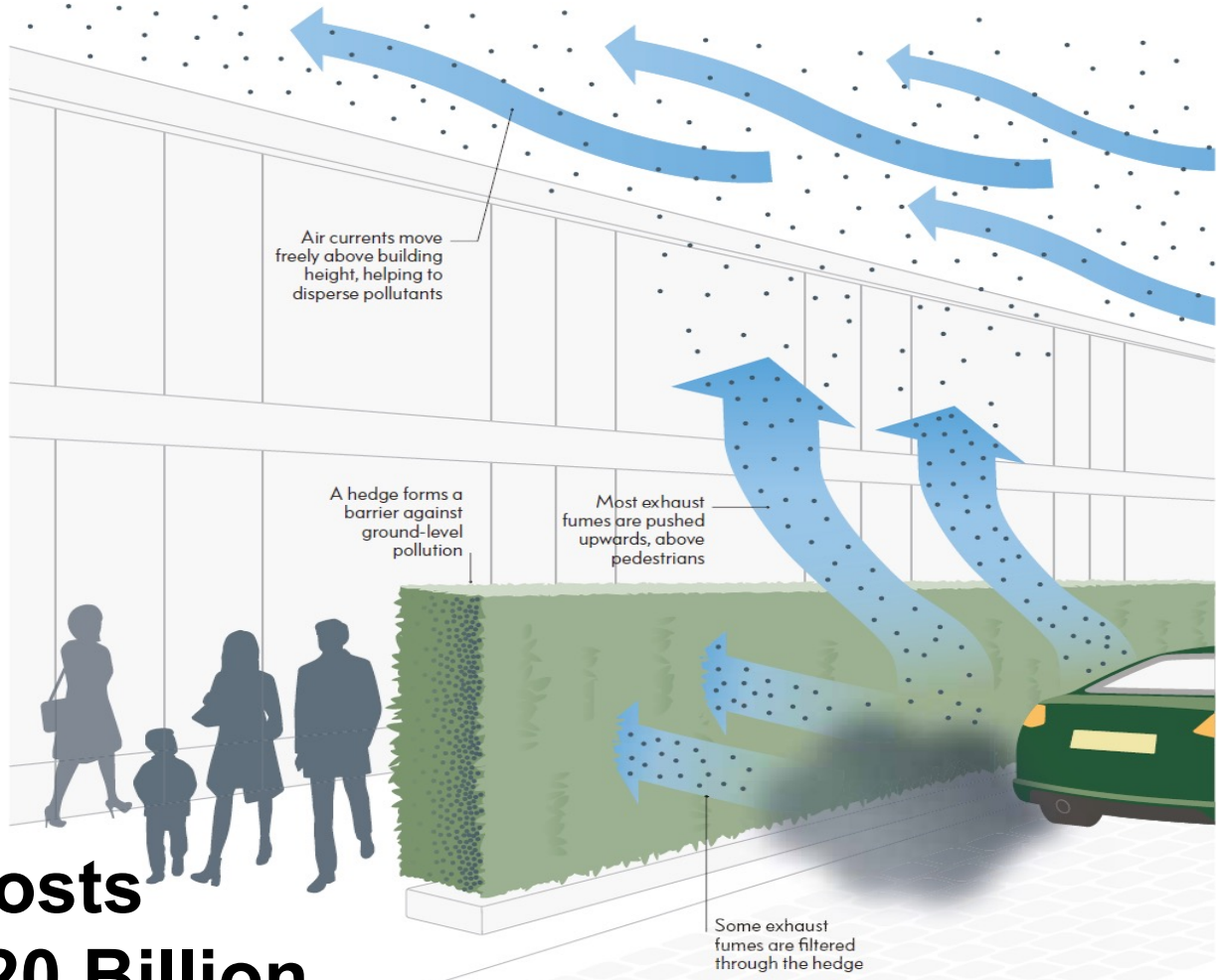
YEW (*Taxus baccata*)



ROUGH LEAVES

Leaves with rough surfaces have uneven profiles that increase air turbulence around the plant, causing particles to attach to the ridges and grooves on the leaf's surface. Examples include hawthorn (*Crataegus monogyna*), hornbeam (*Carpinus betulus*), and Japanese rose (*Rosa rugosa*).

HAWTHORN (*Crataegus monogyna*)



Costs £20 Billion Each Year

CLEANER AIR AT GROUND LEVEL

A hedge barrier is effective from ground level, which is particularly beneficial for children, who are at greater risk because they are nearer to the ground and to the source of emissions.

Trees and **other plants removed** an estimated **1.4 billion kg** (1.5 million tons) of **air pollutants** in the UK in a single year

Climate Resilience: Flood Mitigation

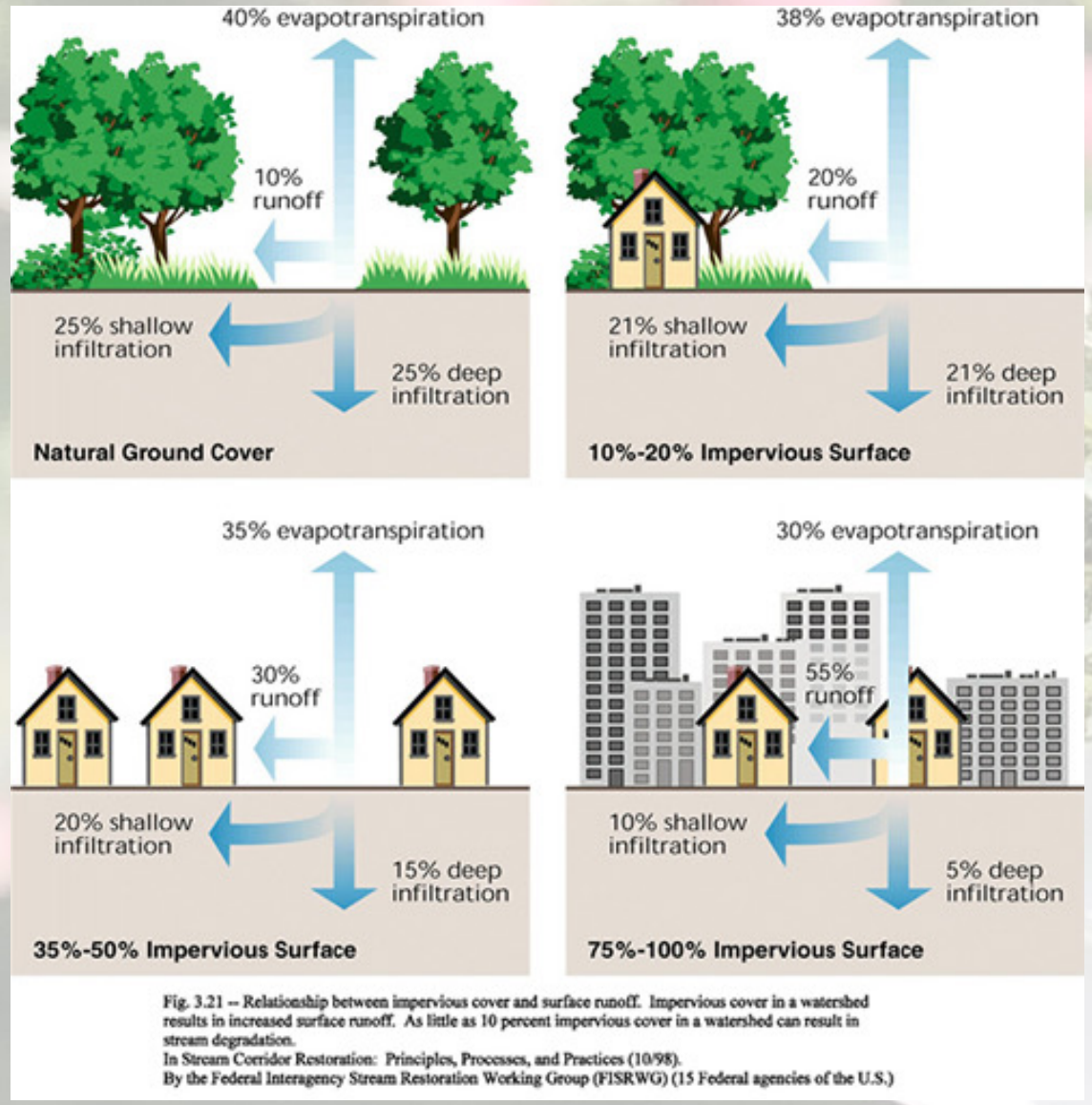
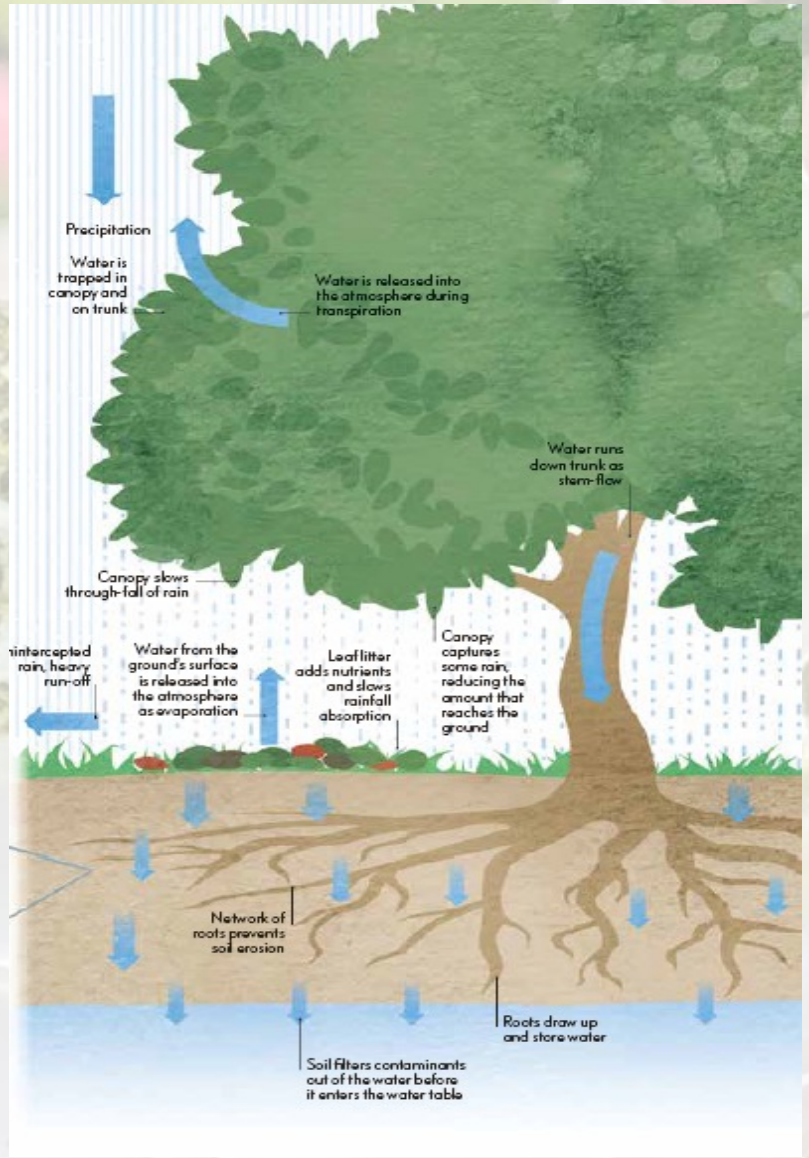


Fig. 3.21 -- Relationship between impervious cover and surface runoff. Impervious cover in a watershed results in increased surface runoff. As little as 10 percent impervious cover in a watershed can result in stream degradation.
In Stream Corridor Restoration: Principles, Processes, and Practices (10/98).
By the Federal Interagency Stream Restoration Working Group (FISRWG) (15 Federal agencies of the U.S.)



Flooding and Managing it

Costs £2.2 Billion Each Year

We need to safeguard ourselves from extinction – Species Recovery Plan!

- We are animals too!
- Animals are very *habitat-dependant*
- It is essential we give more consideration to our habitats?

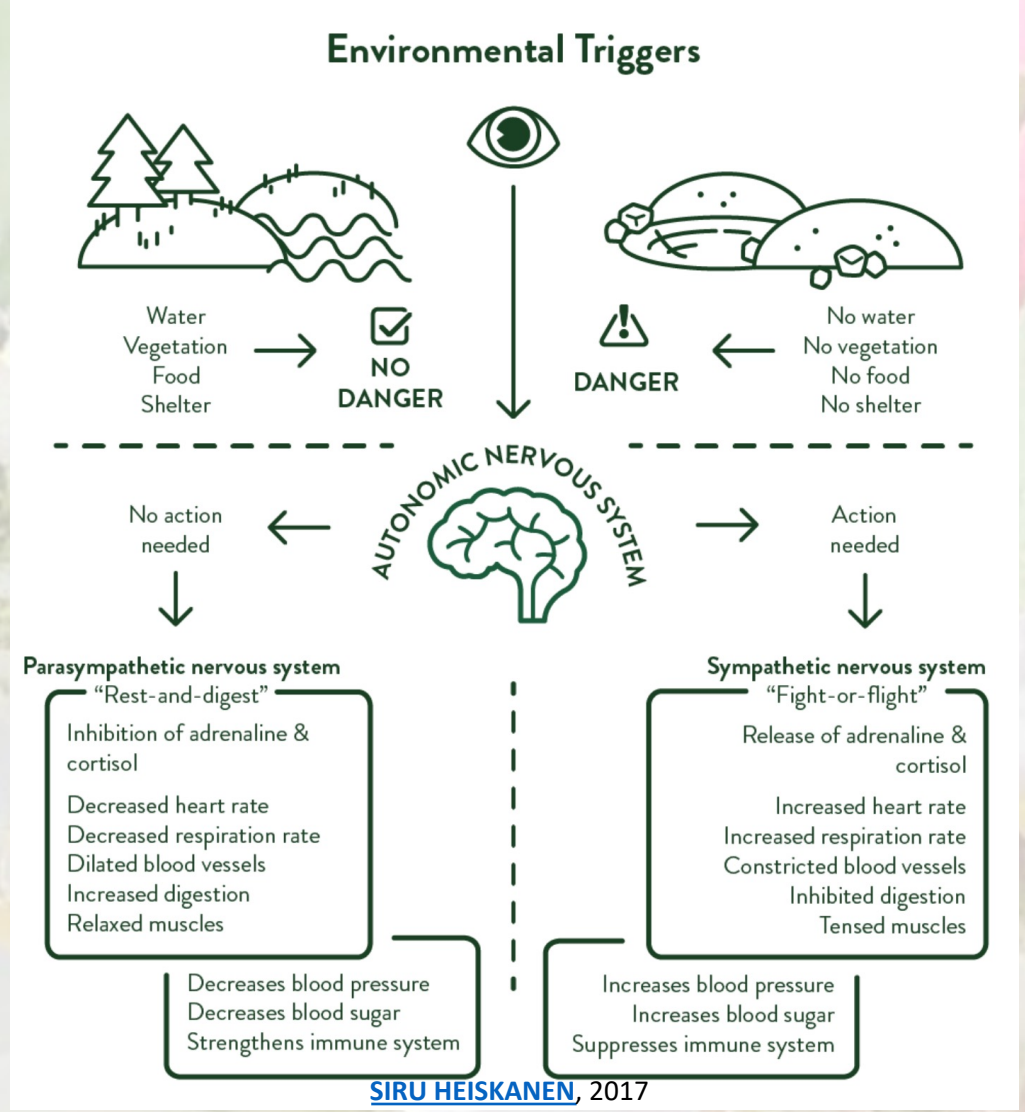
People → green

"Preventative Natural Healthcare"

Autonomic Nervous System

RHS

Nature is an essential Human Right and Everyone should have a Space to Grow



SIRU HEISKANEN, 2017

Economic Resilience: Green into Green Infrastructure

Foresight Factory | OXFORD ECONOMICS

Growing a Green Economy

The importance of ornamental horticulture and landscaping to the UK

OHRG
ORNAMENTAL HORTICULTURE ROUNDTABLE GROUP

ENVIRONMENTAL HORTICULTURE GROUP

Unlocking green growth:
A plan from the environmental horticulture & landscaping industry

c.£42 billion
Total potential GDP footprint of the UK's ornamental horticulture and landscaping industries in 2030, compared with **£28.8 billion** in 2019

763,000
Total jobs contribution potential of the industry in 2030, compared with **674,200** in 2019

£8.7 billion
UK potential tax revenues attributable to the industry in 2030, compared with **£6.3 billion** in 2019

RHS Blueprint for a Wellbeing Garden