

Connecting with Nature: Rural Implications for Health and Land Use

Two horizontal bars, one olive green and one blue, stacked vertically.

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Radically Rural 2020

Aims of this talk



- ☐ Different perspectives on benefits that humans derive from nature
- ☐ Evidence of benefits for health and wellbeing when people have safe experiences of nature
- ☐ Implications for communicating the value of access to nature
- ☐ Applications of research evidence to town planning and programs



Claude Lorraine (1600-1682)
Landscape with a Goatherd & Goats



George Innes (1825-1894)
Under the Greenwood Tree

benefits from nature for people and societies

ecological goods ("provisioning services")



benefits from nature for people and societies

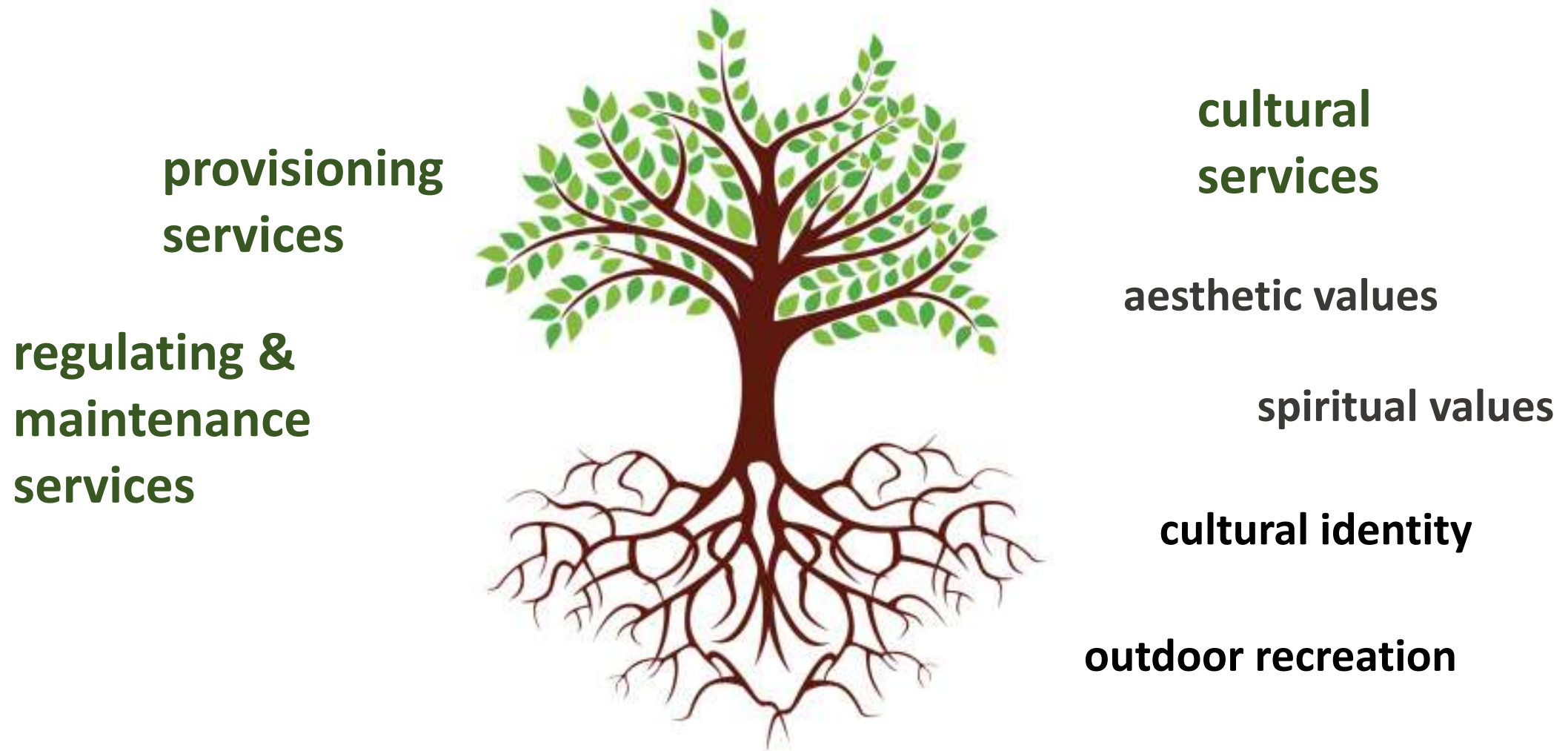
ecological services
(or “regulating & maintenance services”)

ecological goods
 (“provisioning
 services”)



soil creation	biodiversity	carbon storage
erosion & flood control	climate moderation	oxygen production
air purification	water purification	pollination

benefits from nature for people and societies



benefits of nature for people and societies

cultural services
health services – physical health

increased physical activity

self-perceived better health

lower rates
of disease

lower
mortality
rates

reduced crime rates

reduced
stress

well functioning
immune system

sense of vitality



**provisioning
services**

**regulating &
maintenance
services**

benefits from nature for people and societies



provisioning
services

regulating &
maintenance
services

cultural services
psychological health

imagination &
creativity

better academic
functioning

cultural services
psychological health

reduced
stress

increased
positive feelings

decreased negative moods & feelings

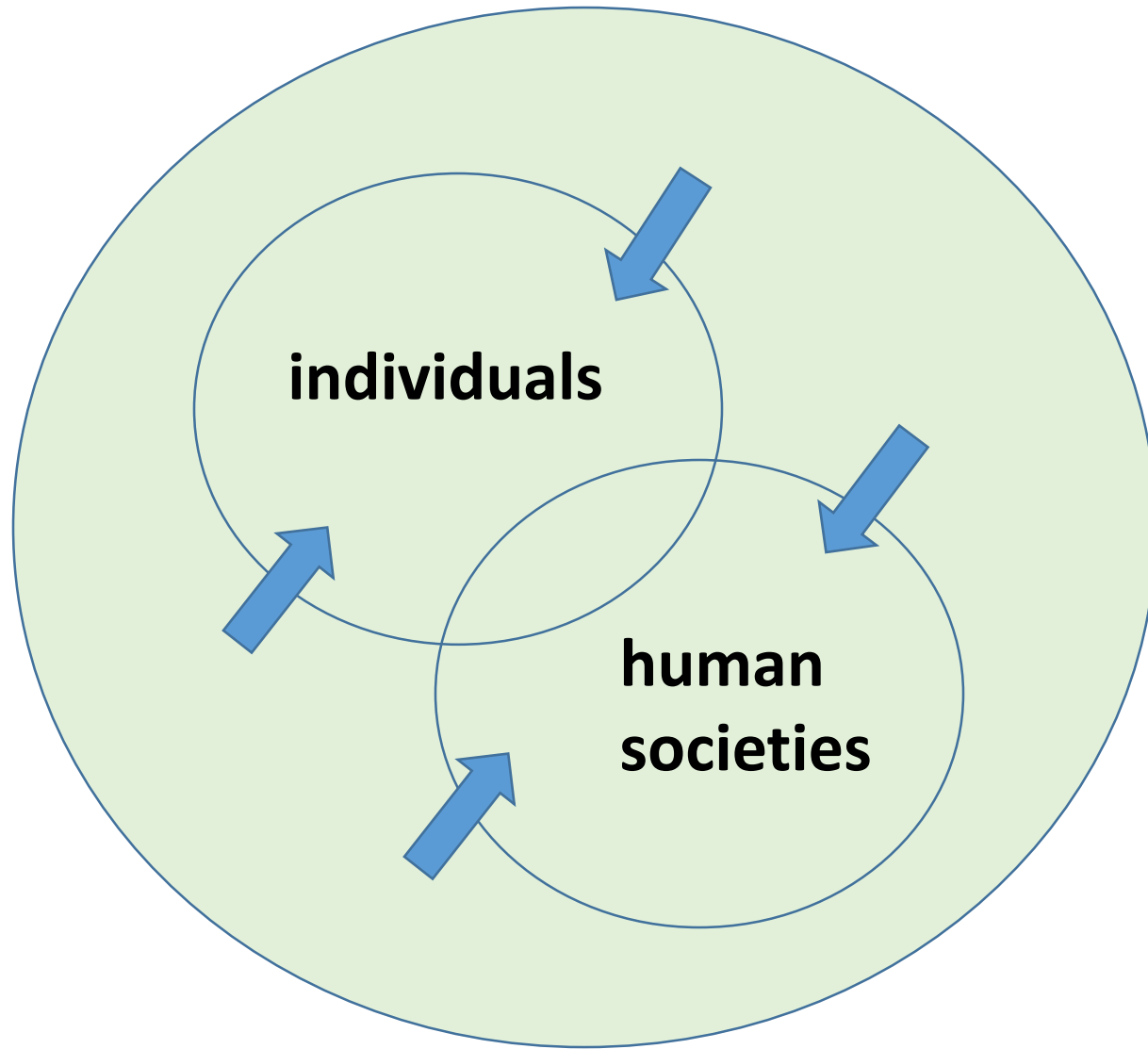
happiness & sense of wellbeing

greater social cohesion & positive
social interactions

better cognitive
functioning

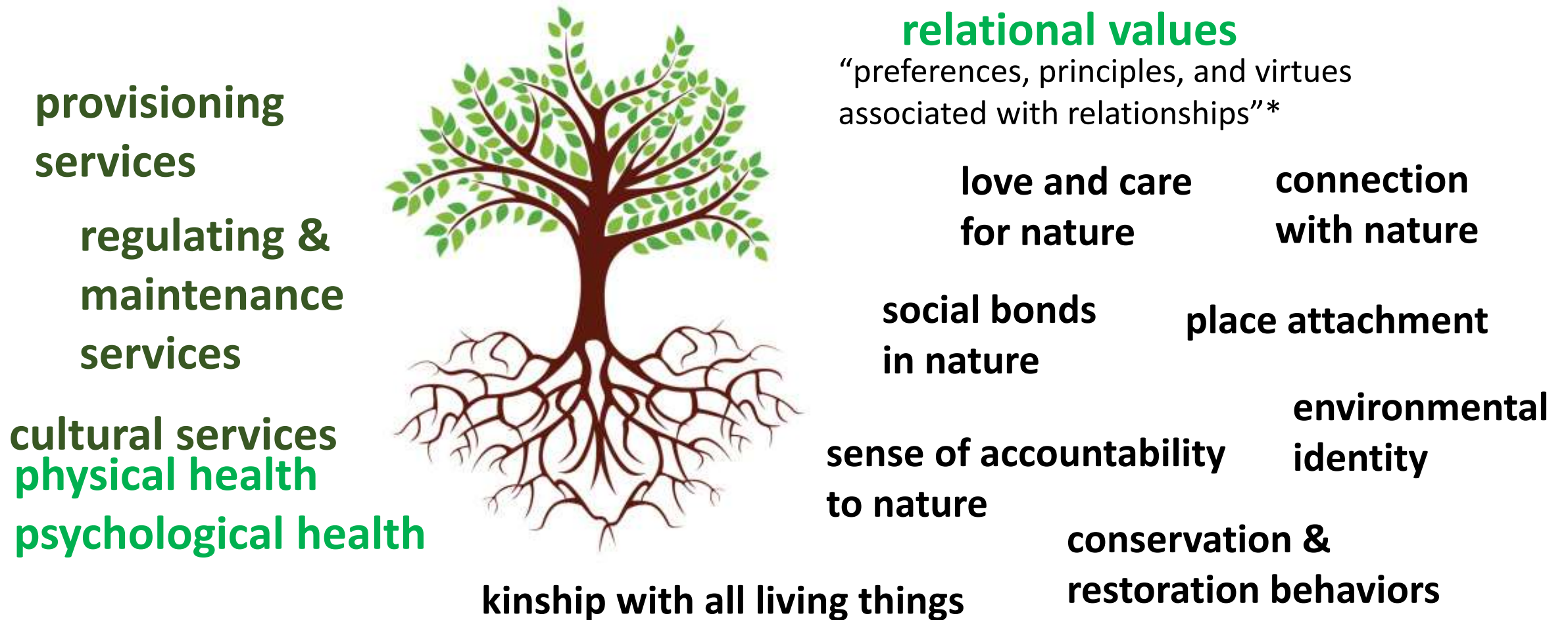
better impulse
inhibition

improved management of life tasks



**benefits from
nature for
people and
societies**

benefits of nature for people and societies



*Chan et al. (2016). Why protect nature? Rethinking values and the environment. *Proceedings of the National Academy of Sciences*, 113: 1462-1465.

A sense of connection with nature is associated with benefits for the health and happiness of both children and adults.

children

**intrinsically positive
experiences**

creative thinking

**pro-social & positive
development**

**self-reported good
health & wellbeing**

fewer psychological complaints



adults

**intrinsically positive
experiences**

personal growth

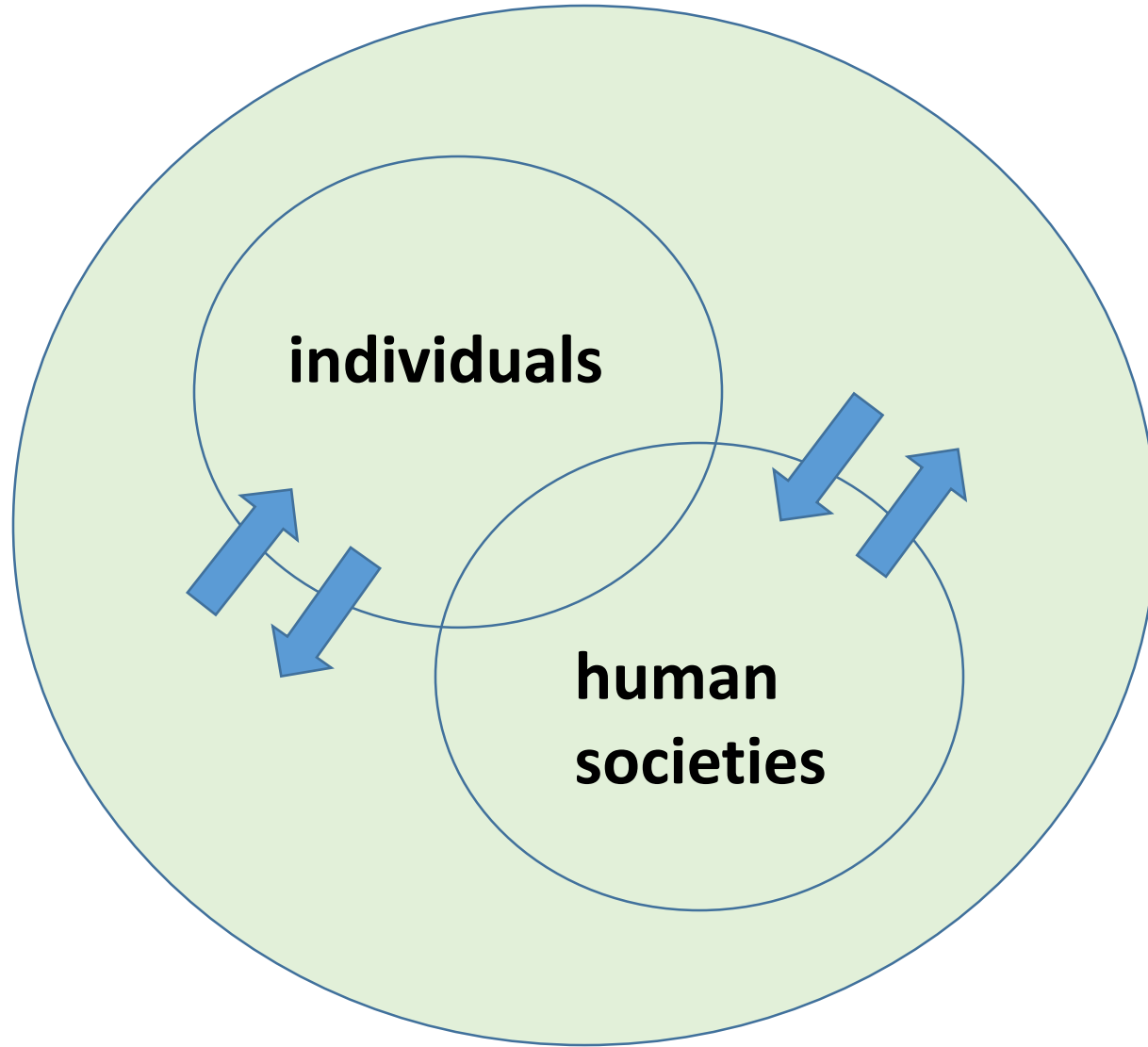
autonomy

vitality

reduced stress

self-reported wellbeing

living meaningfully



**relationships
of mutual
value
between
nature,
people, and
societies**



nature

people

societies

“One Health is an approach that recognizes that the health of people is closely connected to the health of animals and our shared environment.”

Centers for Disease Control
www.cdc.gov/onehealth

***protecting ourselves by
protecting the planet***

correlating vegetation cover with health records



surveys about people's time
and experiences in greenspace



Garfield Park Lagoon, Chicago

experimental designs



Rittenhouse Square, Philadelphia

a walk in
the park



naturalistic
experiments



Robert Taylor Homes, Chicago
photos by William Sullivan



city center



urban park



**urban
woodland**

biomarker measures

Images from
Tyrvainen, L., Ojala, A., Korpela, K., Lanki, T. R.,
Tsunetsugu, Y., & Kagawa, T. (2014). The influence of
urban green environments on stress relief measures.
Journal of Environmental Psychology, 38: 1-9.

physiological effects of nature exposure

- lower blood pressure
- healthier heart rate
- healthy diurnal patterns of cortisol
- measures of skin conductance & muscle tone consistent with reduced stress
- large amplitude alpha waves
- better development and functioning in some areas of the brain
- increased Natural Killer cells (immune function)

Williams, Florence. *The Nature Fix*. New York: W. W. Norton, 2017

Kuehn, S. et al. (2017). In search of properties that constitute an “enriched environment” in humans. *Scientific Reports* 7, article 11920.

OXFORD TEXTBOOKS IN PUBLIC HEALTH

Oxford Textbook of Nature and Public Health

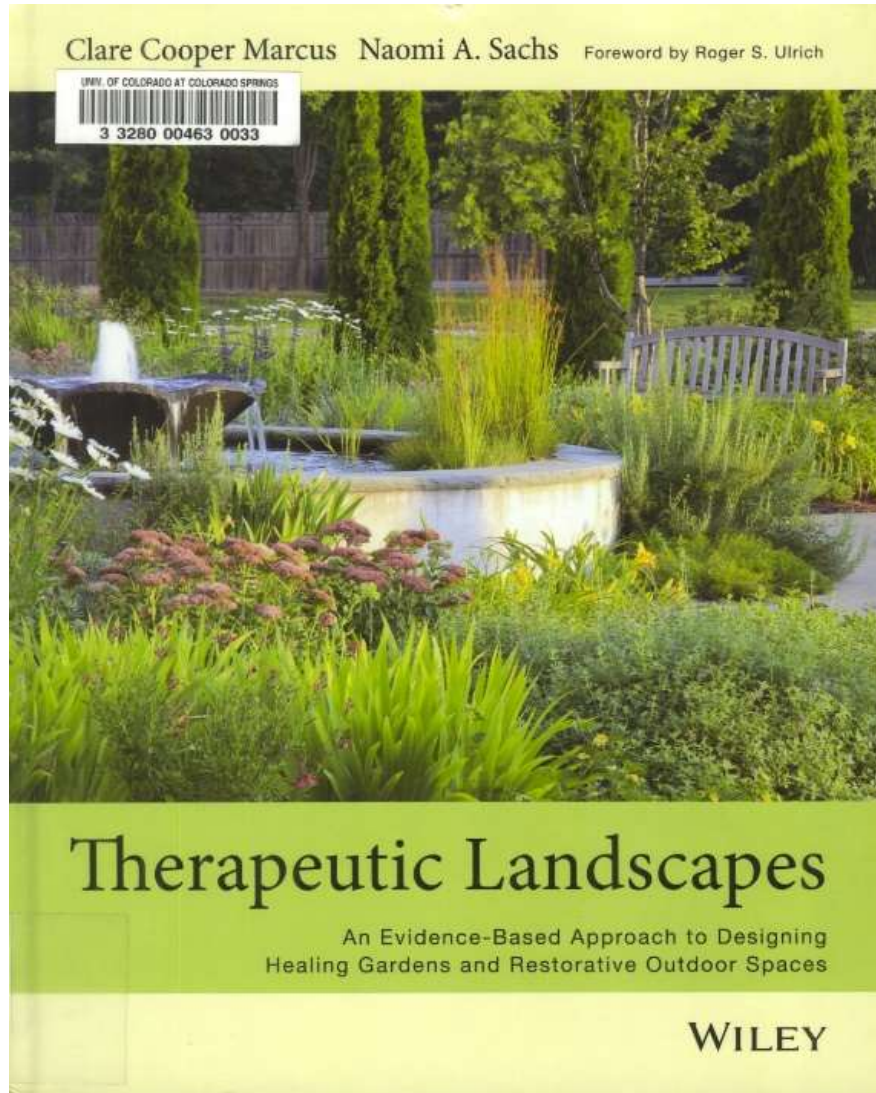
The role of nature in improving
the health of a population

Edited by
Matilda van den Bosch
William Bird

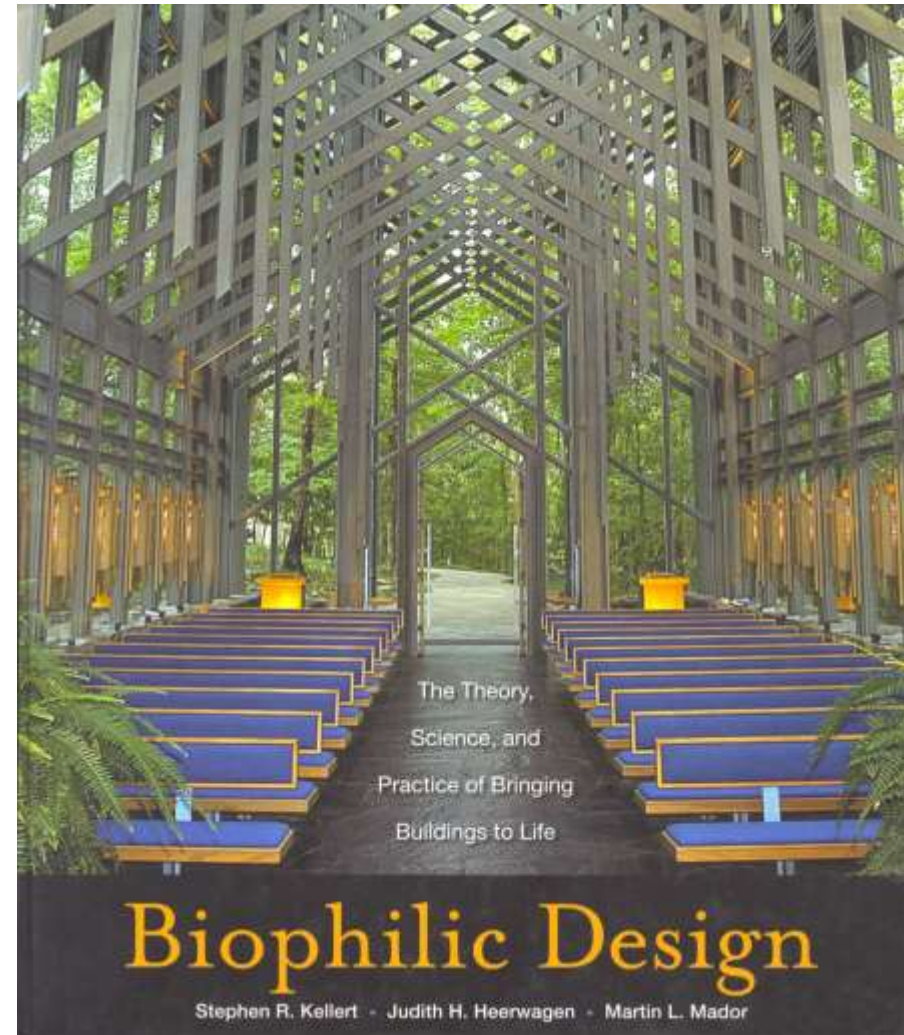


OXFORD

2018



2013



2008

"Louv's vital, inclusive, and inspiring call to better our lives by celebrating and protecting the living world marks the way to profound personal and cultural transformation." —*Booklist*, starred review

the
NATURE
PRINCIPLE



HUMAN RESTORATION
AND THE END OF
NATURE-DEFICIT DISORDER

RICHARD LOUV

author of the international bestseller *LAST CHILD IN THE WOODS*

2011

the
NATURE
FIX



*Why Nature Makes Us Happier,
Healthier, and More Creative*

FLORENCE WILLIAMS

2017

<http://www.apha.org/advocacy/policy/policysearch/default.htm?id=1453>

American Public Health Association
Policy Statement Database

**Improving Health and Wellness
through Access to Nature**

Policy Date: 11/5/2013

Policy Number: 20137



Most of this research assumes a “medication model”: people have a physical or psychological problem, and a “dose” of nature helps them improve.

What dose is needed?

What is the economic value of the health services it provides?

recent evidence for the “dose” of nature to prescribe

A survey of 19,806 residents of the United Kingdom compared people who reported spending no time in nature during the last week with others. The likelihood of reporting good health or high wellbeing became significantly greater at ≥ 2 hours, with no further gain.

White, M. et al. (2019). Spending at least 120 minutes a week in nature is associated with good health and wellbeing. *Scientific Reports*, 9:7730.

When people spent 2-3 hours a week in nature v. 0 minutes, their likelihood of reporting good health was similar to:

- living in an area of low v. high economic deprivation
- being in a high v. low SES occupation
- meeting v. not meeting physical activity guidelines

All green is not the same.



human responses to real or perceived biodiversity

- preference for species richness
- greater identification with species rich places
- greater sense of connection with nature
- more stewardship volunteer hours in biodiverse places
- greater neighborhood / place satisfaction

Aerts, R., Honnay, O., & van Nieuwenhyse, A. (2018). Biodiversity and human health. *British Medical Bulletin*, 127: 5-22.

Lovell, R. et al. 2014. A systematic review of the health and well-being benefits of biodiverse environments. *Journal of Toxicology & Environmental Health B* 17: 1-20.

human responses to real or perceived biodiversity

- greater aesthetic appreciation
- greater subjective wellbeing & happiness
- greater prevalence of good health
- greater perceived sense of restoration

Mavoa, S., Davern, M., Breed, M., & Hahs, A. (2019). Higher levels of biodiversity associate with greater subjective wellbeing in adults living in Melbourne, Australia. *Health & Place*, 57:321-329.

Wheeler, B. W. et al. (2015). Beyond greenspace. *International Journal of Health Geographics*, 14:17

. . . research considerations

- People are not always good judges of species richness—but there is a correspondence between ordinary people's perceptions and expert assessments
- People perceive variety in birds, insects, trees, flowers, and other plants as indicators of biodiversity
- Wellbeing is not consistently related to species richness—but a majority of studies show positive human benefits with real or perceived biodiversity

What are the implications of this research for how we communicate the importance of providing *everyone* with access to nature and biodiverse landscapes?

From January 2018-May 2019, Blue Sky Funders Forum embarked on research to identify a **new narrative** that would ignite foundations with diverse missions to support natural areas and connecting people with nature:

- the environment
- education
- children and youth
- health
- community development and social justice

70
stakeholder
interviews

301
responses to
survey of
stakeholders
& allies

1
5-day
workshop

13 listening
sessions
with 188
partners

reviews of
research

53 external
interviews

Current narrative: “nature is nice to have”

It is nice for people to have time and experiences outdoors, and it may provide some benefits for individuals who spend time in nature, but lack of time in nature is not a national priority or issue.

There are plenty of open spaces and parks where people can go if they choose.

What were people's priorities?

- strengthening communities
 - an equitable and diverse society
-

- personal and public health and wellbeing
- promoting education
- investing in the development of children and youth
- healthy and sustainable environment



**Nature is
nice to
have.**

**Everyone
deserves
the
benefits.**

**Living in a
healthy
community
is a basic
human
right.**

“There are so many public goods that we need and it’s nice to have nature be one of them, but living in a healthy community is a right.”

New narrative: “time outdoors in nature is a basic human right”

When people have meaningful experiences outdoors their quality of life, health, and social wellbeing improve, and in turn their communities become stronger and more sustainable. Everyone deserves the opportunity to enjoy time outdoors, because when people connect with nature we all benefit.

What are the implications of this research for rural planning, policy and programs?

nearby nature

benefits associated with street trees, greenways & green neighborhoods

- decreased stress (measured & self-perceived)
- lower rates of cardiovascular disease
- lower rates of diabetes
- decreased risk of preterm birth
- lower all-cause mortality rates



Twohig-Bennett, C. & Jones, A. (2018). The health benefits of the great outdoors. *Environmental Research*, 166:628-637. (evidence from 143 studies in 20 countries involving > 290 million people)

nearby nature

benefits associated with street trees, greenways & green neighborhoods

- better performance at tasks that require close attention
- better impulse control
- reduced symptoms of ADD & ADHD in children
- decreased negative moods

Bratman, G. N. et al. (2019). Nature and mental health: An ecosystem service perspective. *Science Advances*, 5:eaax09023.

nearby nature

benefits associated with street trees, greenways & green neighborhoods

- greater sense of vitality
- greater self-perceived health
- greater social cohesion
- more positive social interactions
- greater residential satisfaction

Wells, N. & Rollings, K. (2012)
The natural environment in
residential settings: Influences
on human health & function. In
S. Clayton (Ed.), *Oxford
Handbook of Environmental &
Conservation Psychology*.





Main Street in The Catskills, NY (stock image)

street trees &
neighborhood
parks

street gardens



Langley,
Whidbey Island
WA

photo by Seattle
Times



© Carbondale Arts

ARTway section of Rio Grande Trail
Carbondale, CO

town trails
and greenways

planting Latino
Folk Art Garden
along ARTway



© Carbondale Arts

nature-based learning

benefits associated with green school grounds and school surroundings

- better concentration
- lower levels of stress (measured & self-perceived)
- greater self-discipline
- greater student motivation, enjoyment & engagement
- greater physical activity outdoors
- higher scores on standardized tests
- better grades
- higher graduation rates

Kuo, M., Barnes, M., & Jordan, C. (2019). Do experiences with nature promote learning? Converging evidence of a cause-and-effect relationship. *Frontiers in Psychology*, 19 February, 10, Article 305.

Williams, D. R., & Dixon, P. S. (2013). Impact of garden-based learning on academic outcomes in schools. *Review of Educational Research*, 83, 211-235.



© Illène Pevec

school greening

Grand Mesa High School
Parachute, CO

tree planting by high school students



© Illène Pevec

Roaring Fork High School
Carbondale, CO

permaculture garden and
orchard -
family work day
Earth Day 2010



© Genevieve Villamizar



© Genevieve Villamizar



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Ross Montessori School
K-8 charter school, Carbondale, CO

Carbondale Community School
a public K-8 charter school

planting and tasting in the Garden of Yum





Carbondale Community
School

Summer Boot Camp
preparing for the farm stand

benefits associated with community gardens

- increased social capital
- greater sense of collective efficacy
- larger social networks
- stronger neighborhood attachment
- stronger sense of community

benefits associated with community gardens

- view of neighborhood as more beautiful
- increased consumption of fruits and vegetables
- healthy youth development

Draper, C. & Freedman, D. 2010. Review and analysis of the benefits, purposes, and motivations associated with community gardening in the United States. *Journal of Community Practices* 18(4):458-492.

Litt, J.S., Schmiede, S., Hale, J., Buchenau, M., & Sancar, F. 2015. Exploring ecological, emotional and social levers of health promotion through the community garden experience. *Social Science and Medicine* 144:1-8.

community gardens

summer community gardening

Roaring Fork Valley H.S., Carbondale, CO



© Illène Pevec



© Genevieve Villamizar

benefits associated with outdoor adventure

- self-esteem & more positive self-concept
- sense of self-efficacy
- improved mood
- improved interpersonal relationships
- higher levels of physical activity

Myrind, L. et al. (2019). Mental, physical and social health benefits of immersive nature-experience for children and adolescents: A systematic review and quality assessment of the evidence. *Health & Place*, 58, Article 102136.

access to
the great
outdoors
for
everyone



photo
© GOCO

family camping
gear lending

weekend trips
outdoor career internships



school year
school gardens
school trails
outdoor classrooms
in-class nature study
field trips
outdoor careers
internships
outdoor leadership
course

summer
summer sessions
outdoor day camps
paid summer youth crews



© GOCO



© GOCO



Garfield County Outdoors



© GOCO

Rx for Parks

CITY OF COLORADO SPRINGS

Name: _____

Ideas for living a Healthy & Active Outdoor Life

- 5** Eat at least 5 fruits and vegetables every day.
- 2** Limit screen time to 2 hours or less per day.
- 1** Get 1 hour or more of outdoor physical activity every day.
- 0** Drink zero sugar-sweetened drinks. *Drink water or low-fat milk instead.*

My Goals to increase my physical activity

Date to Start: _____

Where: _____

Activity(ies): _____

Start with _____ minutes _____ days per week

Increase to _____ minutes _____ days per week

Health Care Provider

Date

*No matter your age and fitness level or where you live,
there are many simple and enjoyable steps that you can take
to feel better, be stronger, and enjoy a higher quality of life.*

Get Out and Be Active!

Visit www.springsgov.com/Parks to find a park, trail or open space near you.

Nature Prescriptions—

Some healthcare systems
and medical professionals
are prescribing nature.