

On Nature

Nature and Health

Mini Med School

27 May, 2021

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a place of mind
THE UNIVERSITY OF BRITISH COLUMBIA
Faculty of Medicine



University
of Victoria

let's talk  science

Uvic Land Acknowledgment

We acknowledge with respect the Lekwungen peoples on whose traditional territory the university stands and the Songhees, Esquimalt and WSÁNEĆ peoples whose historical relationships with the land continue to this day.



Introductions & disclosures

- Welcome to the 7th talk of Mini Med School
- This talk will be recorded
- Post-series surveys, future series
- Completion/participation certificates



Introductions & disclosures

- I am a medical student and not a forest medicine expert (yet)
- This talk is intended for your entertainment and education, and is not meant to replace advice or treatment from your family physician or other health care professionals



Introductions & disclosures

- I hope to share with you an eclectic talk about the value of nature to our health and well-being
- I may be preaching to the choir
- Again, thank you for joining us for our second-to-last talk in this series!



Introductions & disclosures

- All pictures used are free stock photos or photos available under a Creative Commons license unless otherwise noted



Agenda

- Why discuss nature?
- Why do (most) people like nature?
- A brief look into the past
- Nature in the news
- Nature and stress
- Nature and the immune system
- Nature and chronic disease



Agenda cont'd

- The five senses
- Forest bathing
- Gardening
- Nature and the young
- Design implications
- Nature dosage
- Nature and exercise
- ParksRx
- Resources and closing remarks



But first: a broad definition of “nature”

- I am generally referring to being outdoors or surrounded by vegetation
- Effects vary, but all kinds of nature can ultimately be beneficial
 - Houseplants/conservatories
 - Animals
 - Gardens
 - Parks
 - Wilderness
 - In a pinch, images or other “synthetic” nature (e.g. scents)
 - Even imagination...? (visualization, reading)



Why discuss nature? Some benefits...

- Time spent in nature may...
 - Combat stress
 - Reduce anxiety
 - Help alleviate depression
 - Strengthen the immune system
 - Bolster creativity
 - Support memory/recall
 - Improve sleep
 - Help us to experience “awe”
 - And expand our perception of time!



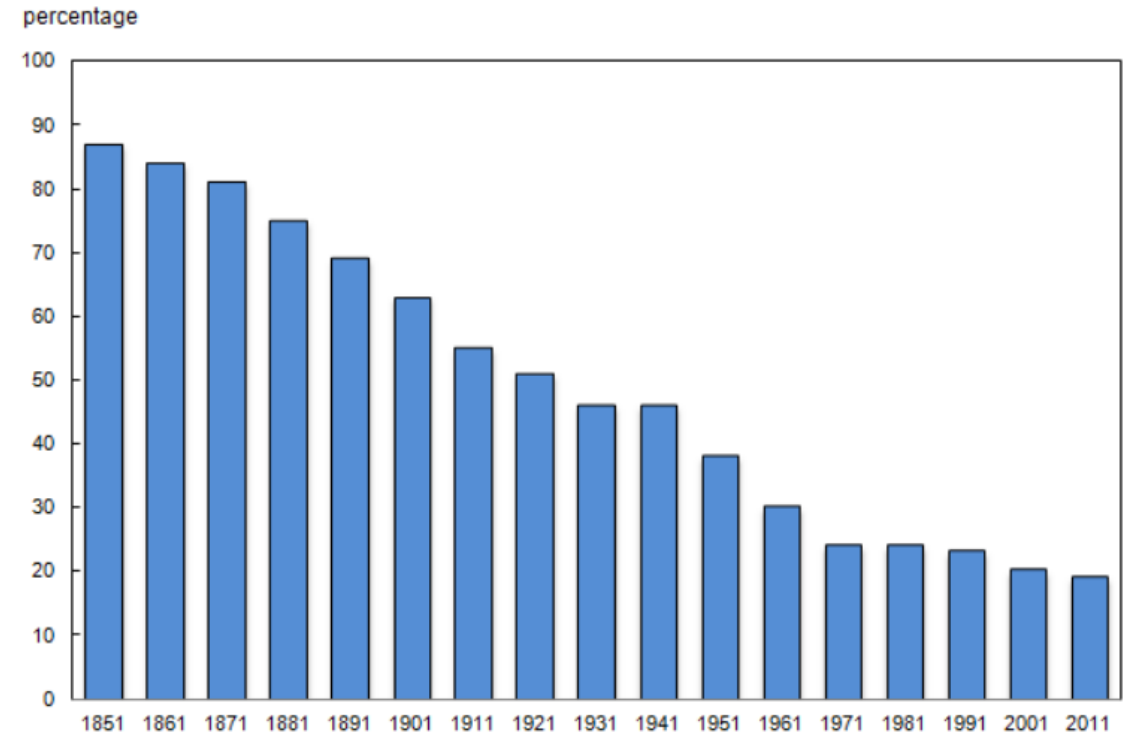
Why discuss nature?

- Like nutrition, sleep, and exercise, our environment shapes our health
- Nature has long been recognized intuitively as being beneficial for health
- Only relatively recently have nature's effects on health been "rediscovered" and studied formally

Why discuss nature?

- Canada's population is now overwhelmingly "urban"
 - Over 80% of us live in "population centres"
 - In 2011, B.C. was the least rural province (14%)
- Life is increasingly dominated by built environments... and screens

Chart 1
Proportion of the population living in rural areas, Canada,
1851 to 2011



Note: The data presented for the censuses from 1851 to 1951 are based on the definition of rural areas in use at that time.

Source: Statistics Canada, censuses of population, 1851 to 2011.

<https://www150.statcan.gc.ca/n1/pub/11-630-x/11-630-x2015004-eng.htm>

~~Inquisition~~ Multi-part poll

- Do you feel like your well-being has been adversely affected by the ongoing pandemic?
- How much time a day, on average, do you spend outside?
- Is this more or less than the amount you spent before the pandemic?

Why discuss nature *right now*?

- It has been a strange 16 months.
- Many have been spending less time outdoors (though not all!)
- The pandemic has taken a toll on people's well-being



WHAT'S NEW

Mental health impacts of COVID-19: Round 3



How are we feeling? Canadians are worried, bored, stressed, lonely and sad

For immediate release How are we feeling? Canadians are worried, bored, stressed, lonely and sad CMHA and UBC release data [...]

[Continue reading ▶](#)

<https://cmha.ca/>

Why discuss nature *right now*?

- Time in nature may be able to help us in several domains of health
- It is widely accessible and cost-effective
- Perhaps easier to access than many other resources right now

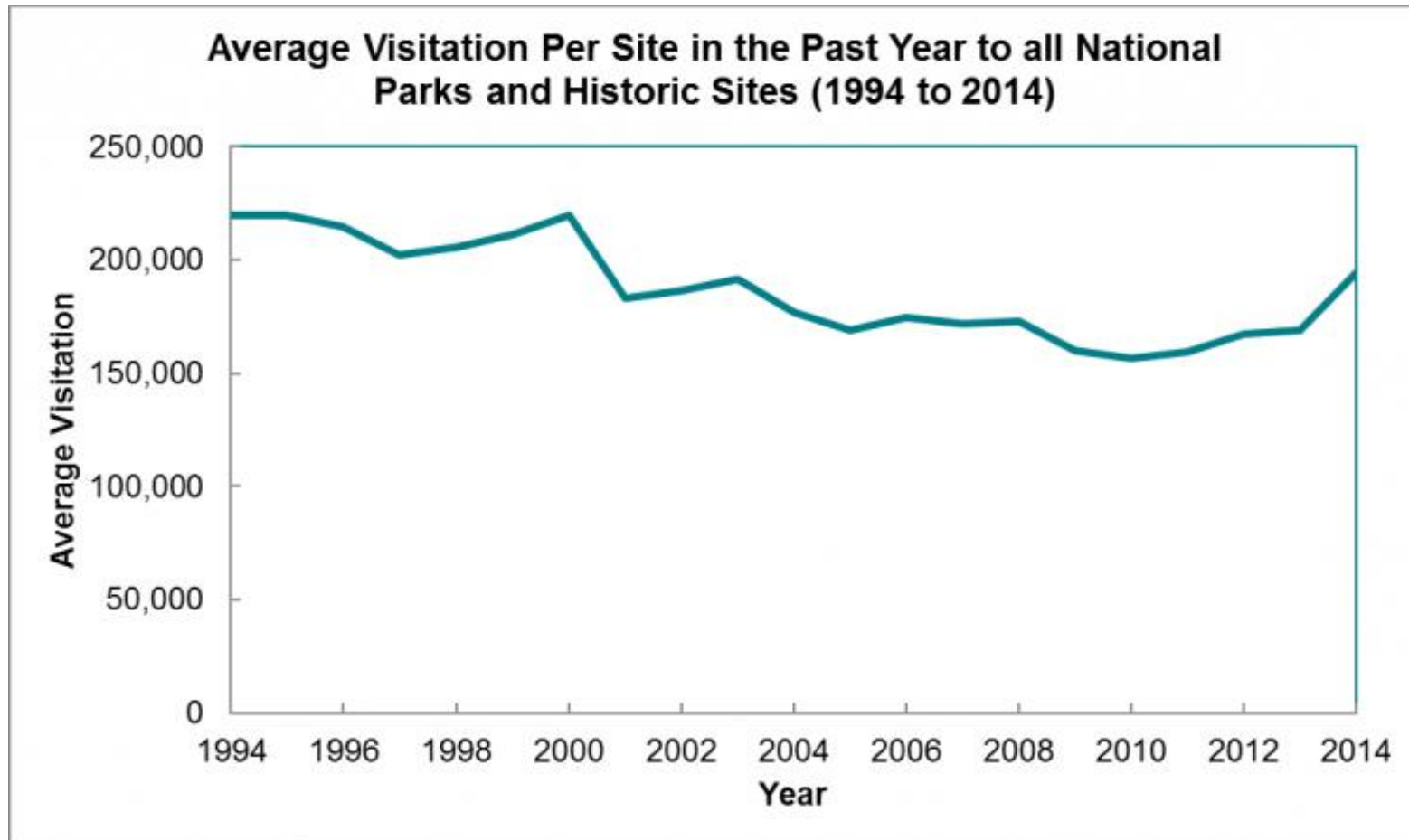


Why discuss nature *right now?*

- And spending more time outdoors is something almost anyone can do safely... *without* necessarily consulting a health care provider first

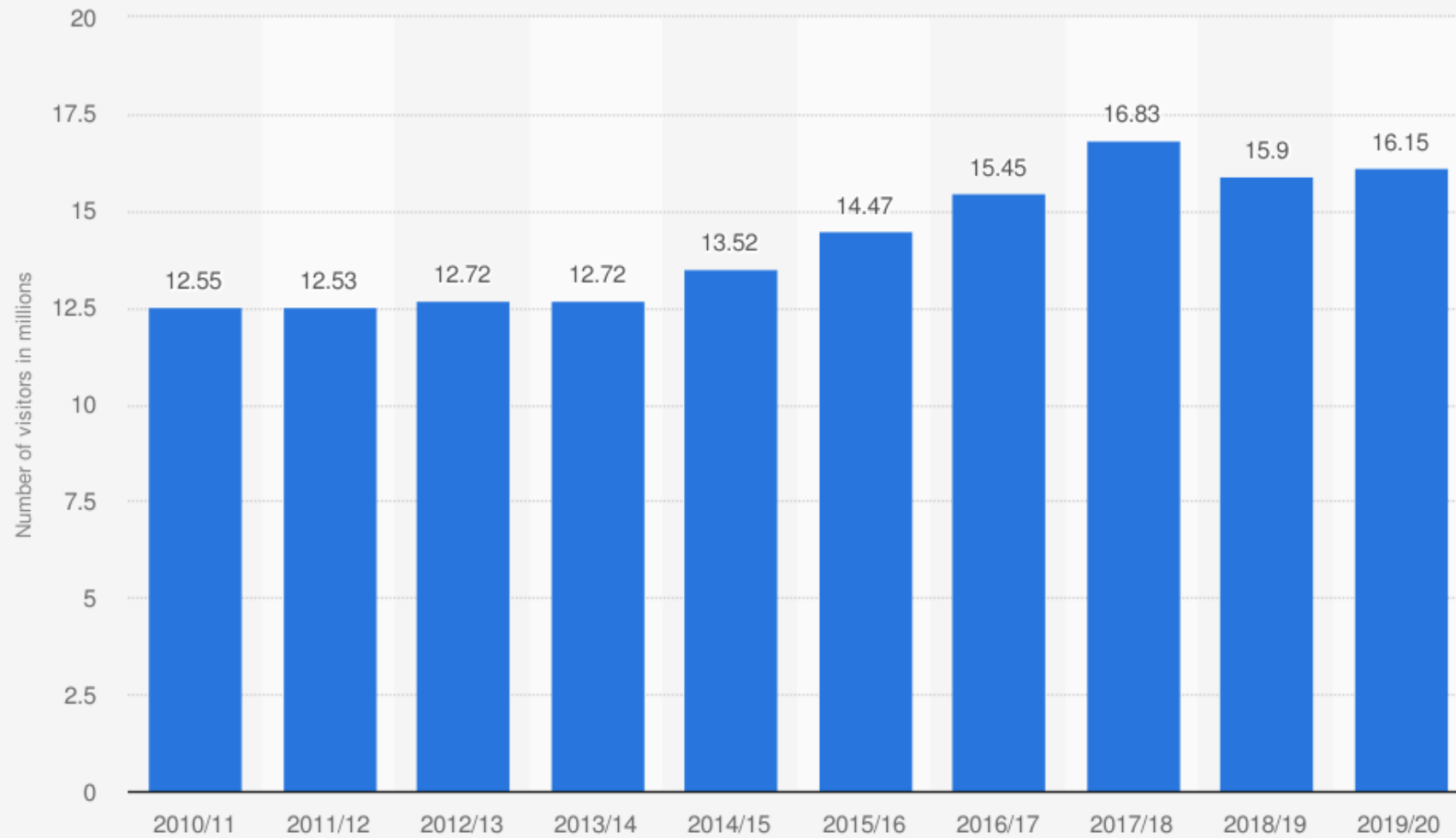


Why discuss nature *right now*?



<https://uwaterloo.ca/canadian-index-wellbeing/what-we-do/domains-and-indicators/average-visitation-site-all-national-parks-and-national>

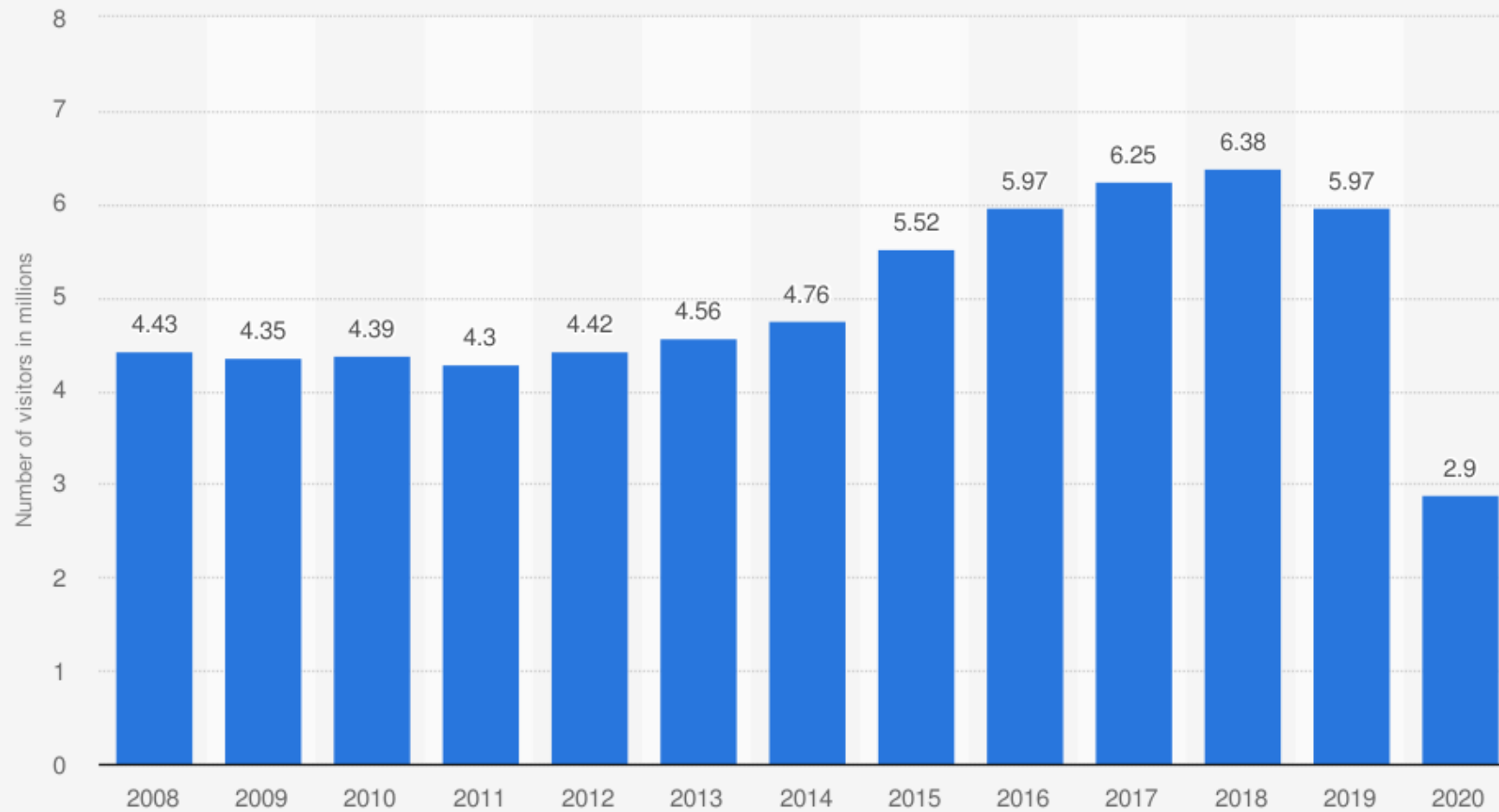
Number of visitors to national parks in Canada from 2011 to 2020 (in millions)



Source
Parks Canada
© Statista 2021

Additional Information:
Canada; Parks Canada; 2010/11 to 2019/20; a fiscal year runs from April 1 to March 31.

Number of recreational visitors to the Grand Canyon National Park in the United States from 2008 to 2020 (in millions)



Source
National Park Service
© Statista 2021

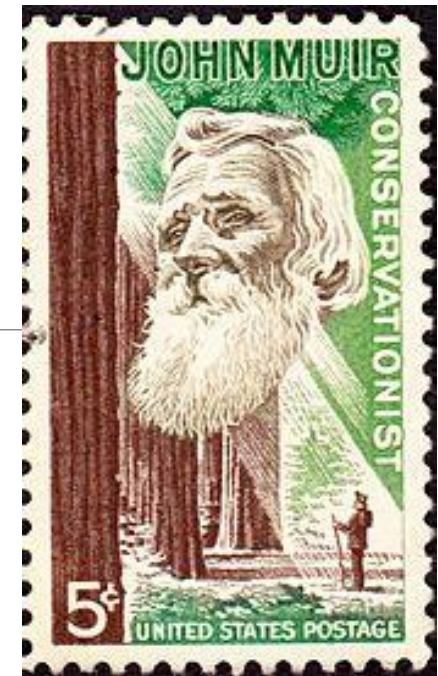
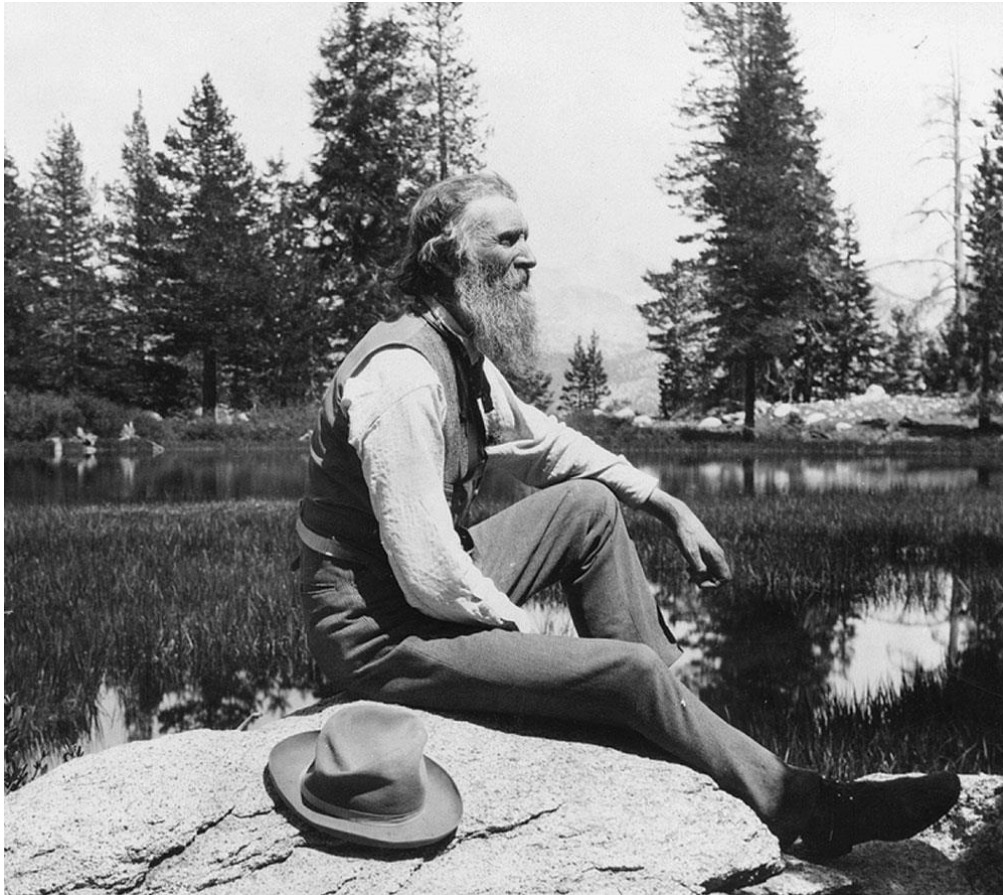
Additional Information:
United States; National Park Service; 2008 to 2020

Poll – “nature” or nurture?

- Do you think we have an innate love of nature, or do you think love of nature is learned? (Pick the factor you think is most important.)



One man's opinion



- *“There is a love of wild nature in everybody, an ancient mother-love showing itself whether recognized or no, and however covered by cares and duties.”*
— John Muir

Nature or nurture?

- Why do (most) people like nature?
- The Biophilia Hypothesis
 - General concept credited to E. O. Wilson
 - We know that certain “biophobias” exist
- “Soft fascination” and fewer choices



A brief look into the past

- Nature long recognized as a tonic
- Countryside and wilderness retreats



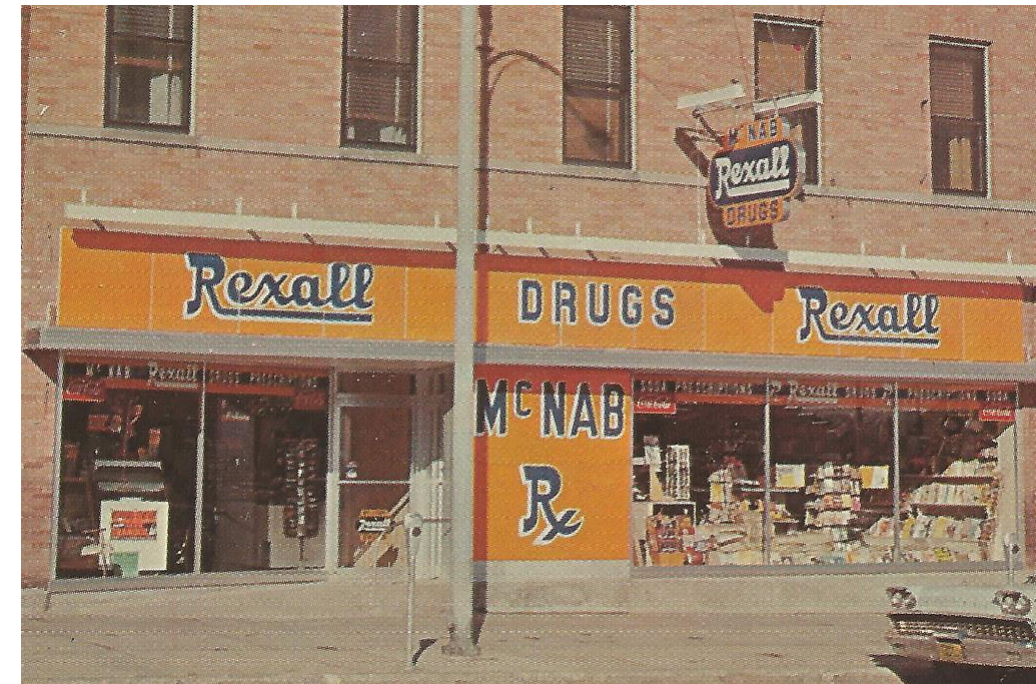
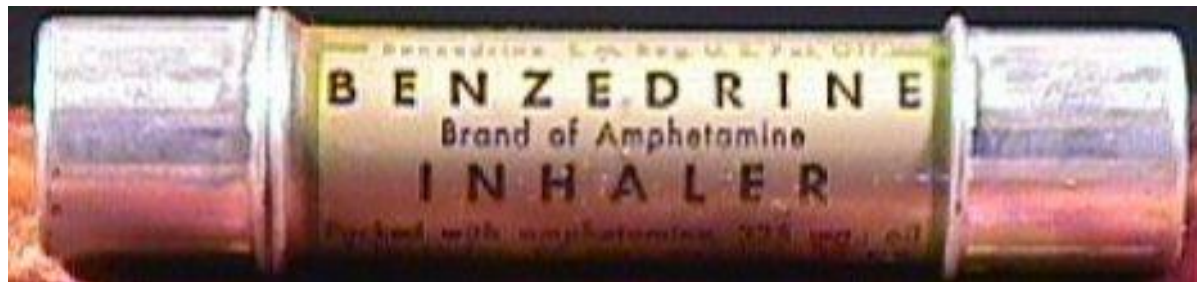
A brief look into the past

- *“It is the unqualified result of all my experience with the sick that, second only to their need of fresh air, is their need of light; that, after a close room, what hurts them most is a dark room and that it is not only light but direct sunlight they want.”*



A brief look into the past

- Often intuited, rarely studied
- By the mid-1900s, the age of pharmaceuticals was in full swing, and they became the focus of most studies
 - Funding
 - Complexity
- A renaissance is underway



A brief look into the past – and around the world

- Emerging field of study
- Much research regarding the health benefits of nature comes from East Asia (predominantly South Korea and Japan)



Nature in all kinds of news

- British Columbia Medical Journal published an article called “A walk in nature: The superfood of physical activities” in its March 2021 edition
 - Recommends a 30-minute walk in nature as an excellent form of physical activity accessible to the majority of people
- Even Costco has cottoned on: Costco Connection May/June 2021

Into some specifics!



Nature and stress

- In a nutshell,
 - Two of our bodily nervous systems are in opposition to each other
 - Sympathetic (fight/flight) and parasympathetic (rest/digest)
- A number of studies have demonstrated the following after nature exposure:
 - Heart rate variability analysis -> parasympathetic activity up in a forest environment
 - Salivary cortisol down
 - Pulse rate down
 - Positive feelings up
 - Negative feelings down

Lee, J., Park, B. J., Tsunetsugu, Y., Ohira, T., Kagawa, T., & Miyazaki, Y. (2011). Effect of forest bathing on physiological and psychological responses in young Japanese male subjects. *Public health*, 125(2), 93–100. <https://doi.org/10.1016/j.puhe.2010.09.005>

Nature and the immune system

- *Mycobacterium vaccae*
 - Immunotherapy studies (pulmonary tuberculosis)
 - Decreased anxiety and increased learning (in mice)
- NK (Natural Killer) cells



Nature and chronic disease

Hypertension
Hypertension is a condition characterized by high blood pressure in the arteries. Normal blood pressure is classified as less than 120/80 mmHg. Hypertension is classified as high blood pressure.



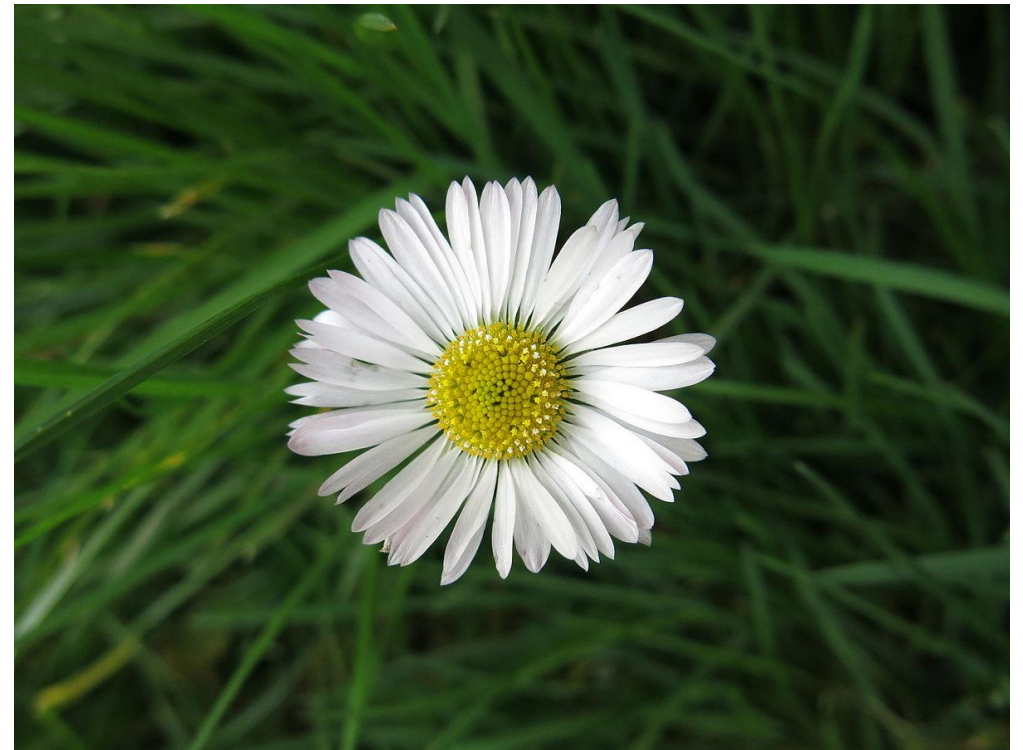
Q&A

- Ask me anything (within reason!)
- We will also have a Q & A at the end of the talk.
- What I can't answer now, I may be able to find out. You may also email uvicmms@gmail.com with questions after the presentation.

Come back for more after the break!

- This may be a good chance to look out your window, take in fresh air on your balcony, or contemplate your houseplants.

(While enjoying your tea/coffee.)



Intermission



Agenda cont'd

- The five senses
- Forest bathing
- Gardening
- Nature and the young
- Design implications
- Nature dosage
- Nature and exercise
- ParksRx
- Resources and closing remarks



The five senses

- Information of interest regarding each of (well, *most* of) the sensory modalities



Sight

- A room with a view

- Ulrich R. S. (1984). View through a window may influence recovery from surgery. *Science (New York, N.Y.)*, 224(4647), 420–421. <https://doi.org/10.1126/science.6143402>



- More support

- Kuo, F.: series of studies on Chicago housing complexes published in 2001 in *Environment & Behaviour*

Hearing

- Birdsong, water



Smell... and air

- Phytoncides



Poll

- Do you like to dine *al fresco*?



Touch and taste

- Research is thinner on the ground...
- Anecdotally, food is often reported to taste better outdoors – why?
- Goes back to an increase in parasympathetic nervous system activity in nature



And some activities...

- Many activities in nature forcibly engage all your senses!
- Two of note:
 - Forest bathing
 - Gardening



Forest bathing

- Primarily in Japan, forest bathing has become a popular pursuit
 - Time spent mindfully in the wilderness, engaging all senses
- Japan has certified forest-therapy bases
- (Similarly, South Korea has a National Forest Plan and centres designed for citizens' well-being)



Forest bathing

- “...forest bathing activities might have the following merits: remarkably improving cardiovascular function, hemodynamic indexes, neuroendocrine indexes, metabolic indexes, immunity and inflammatory indexes, antioxidant indexes, and electrophysiological indexes; significantly enhancing people's emotional state, attitude, and feelings towards things, physical and psychological recovery, and adaptive behaviors; and obvious alleviation of anxiety and depression.”



The joy of gardening

- One activity that allows engagement of each of the modalities!
- Horticultural therapy



A brief note on prisons



- View of nature versus prison courtyard: fewer visits to sick bay
- Prison gardening



<https://www.rhs.org.uk/get-involved/community-gardening/news/articles/windlesham-trophy>



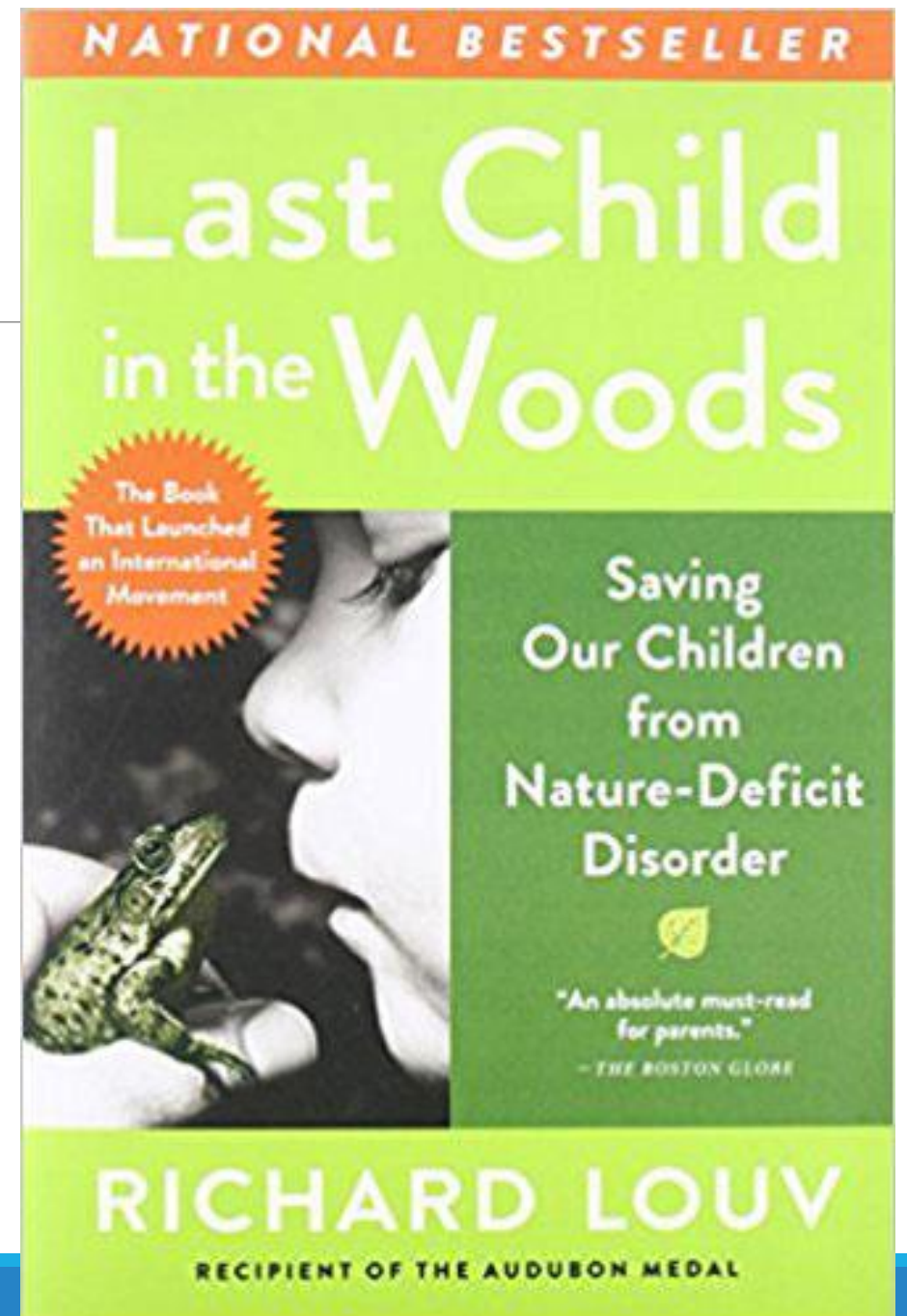
Poll

- Are you a grandparent (or similar)?



Nature and the young

- Nature deficit disorder?



Nature and the young

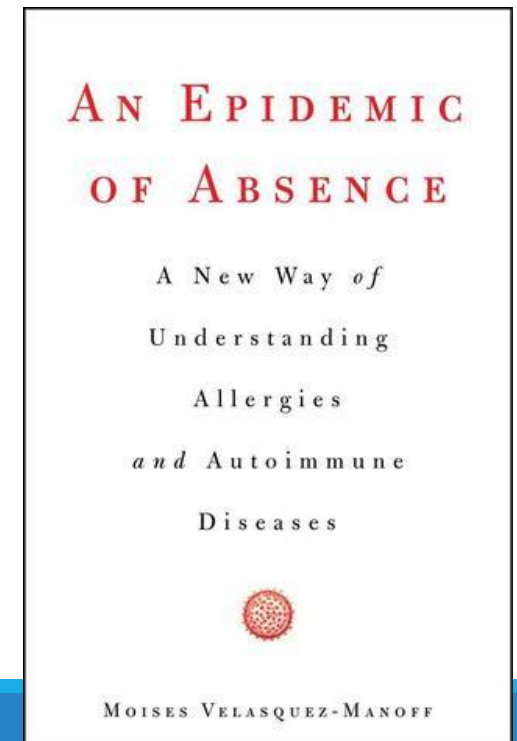
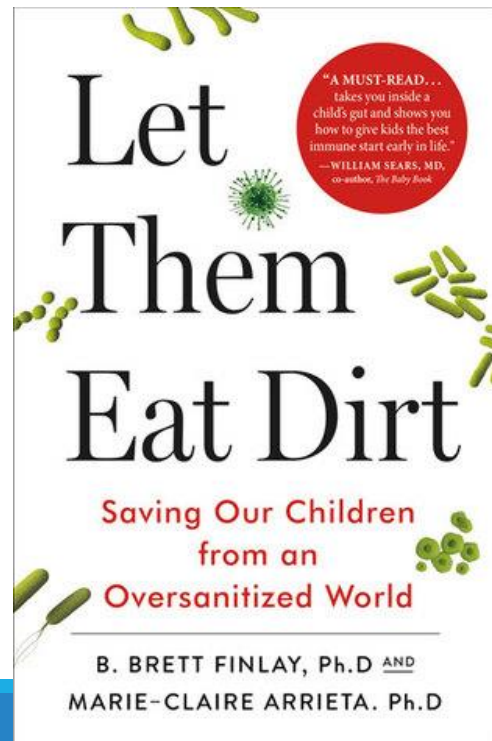
- Outdoor programs or play opportunities at school and elsewhere:
 - Support learning
 - Improve resilience
 - Facilitate development of motor skills, strength, and balance
 - Reduce rates of anxiety and depression



Nature and the young

- Rural living and higher levels of nature exposure after 2 may protect against or moderate symptoms of attention-deficit/hyperactivity disorder (ADHD)

- Immune system



Design implications

- All kinds of institutions and (sub)urban landscapes would do well to incorporate a little - or a lot of - greenery in their design



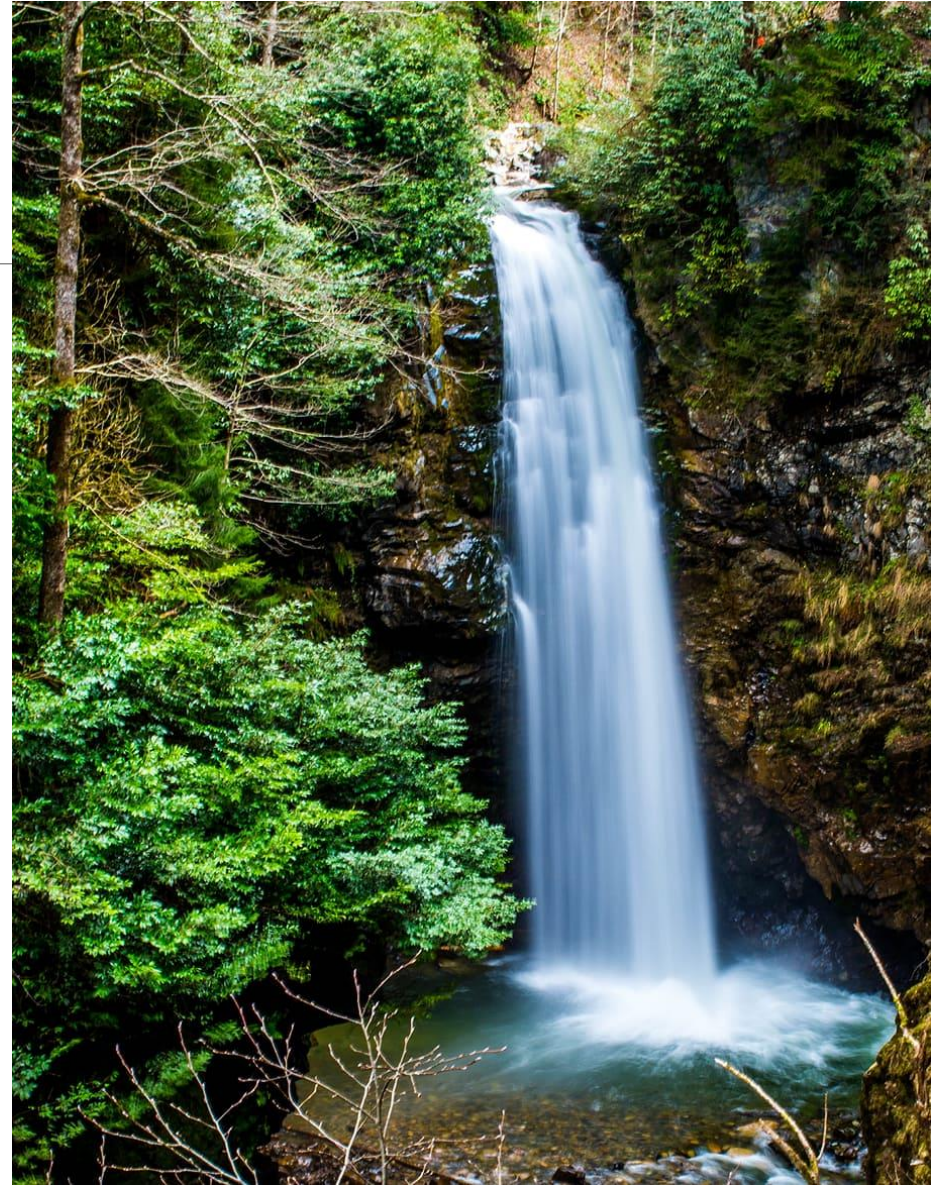
Side note: animal magnetism

- Do you have a pet? Do you devote time to animals?



Poll

- How much time in nature do you think is required for significant and lasting health benefits?



Nature dosage

- The Finnish Forest Research Institute recommends at least five hours a month for significant and lasting benefits
- 2 hours/week per ParksRx (to be discussed)
- Dose-response effect
 - Some is better than none; more is better



Nature and exercise

- Harkening back to Julia's exercise talks
- At least 150 minutes of aerobic activity is recommended per week
 - 5 x 30 minutes, moderate to vigorous
- Note that this is MORE than the minimum recommended weekly nature allowance!
- Brisk walking outside fits the bill



Nature and exercise

- “Walking in nature has restorative effects over and above the effects of exposure to nature scenes (viewing nature on TV) or physical exercise alone (walking on a treadmill in a gym)...”
- Walking in nature lowered cortisol levels more than simply watching nature on TV did, and it improved mood more than either indoor exercise or watching nature programming

Olafsdottir, G., Cloke, P., Schulz, A., van Dyck, Z., Eysteinnsson, T., Thorleifsdottir, B., & Vögele, C. (2020). Health Benefits of Walking in Nature: A Randomized Controlled Study Under Conditions of Real-Life Stress. *Environment and Behavior*, 52(3), 248–274.
<https://doi.org/10.1177/0013916518800798>



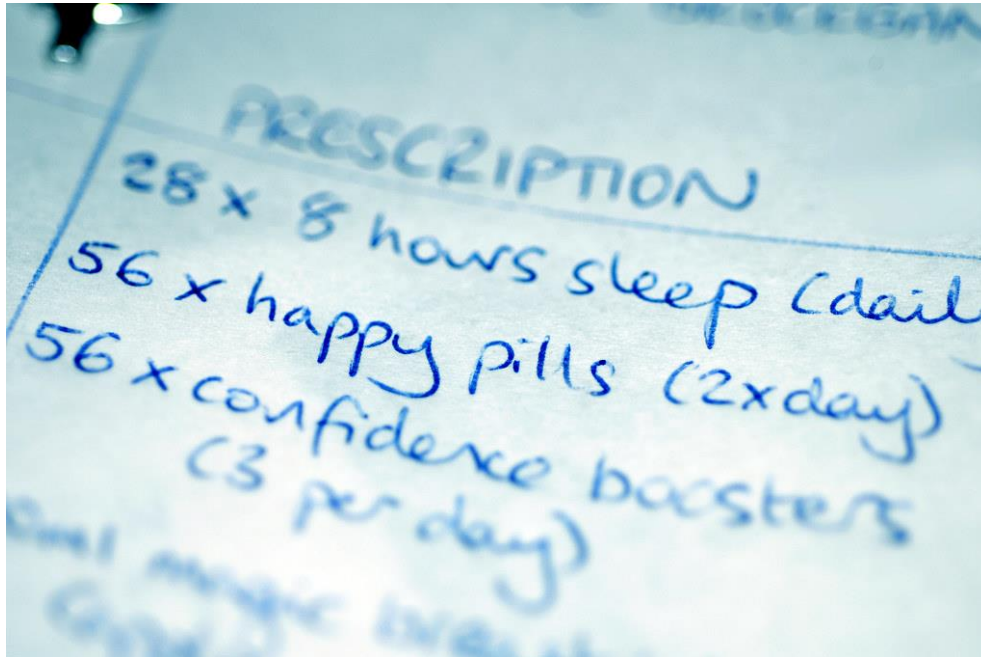
Poll

- Have you ever discussed spending time in nature with your doctor/health care provider – or even received a nature prescription from him or her?



ParksRx

- There is now a ParksRx (Parks Prescriptions) program available in B.C.



No Child Left Inside

PRESCRIPTION

An important message from your Doctor's office,
The Kalamazoo Nature Center, and the Children & Nature Network
For happier, healthier kids who do better in school.

Name _____

DOB _____

Date _____

R_x

*Spend time
Outside daily*

Refills Unlimited

Dr. _____

 Kalamazoo
Nature Center
NatureCenter.org

 children & nature
NETWORK
childrenandnature.org

To sum it up...

- It goes without saying that, sometimes, nature alone is *not* enough
- But it can usefully and safely be added to almost any other course of therapy



To sum it up...

- Aim for your 2 hours a week
- Your mental and physical health are likely to benefit
 - Stress, depression, anxiety, immune system, sleep, digestion, inflammation...
- Plants, animals, parks, wilderness – it's all fair game

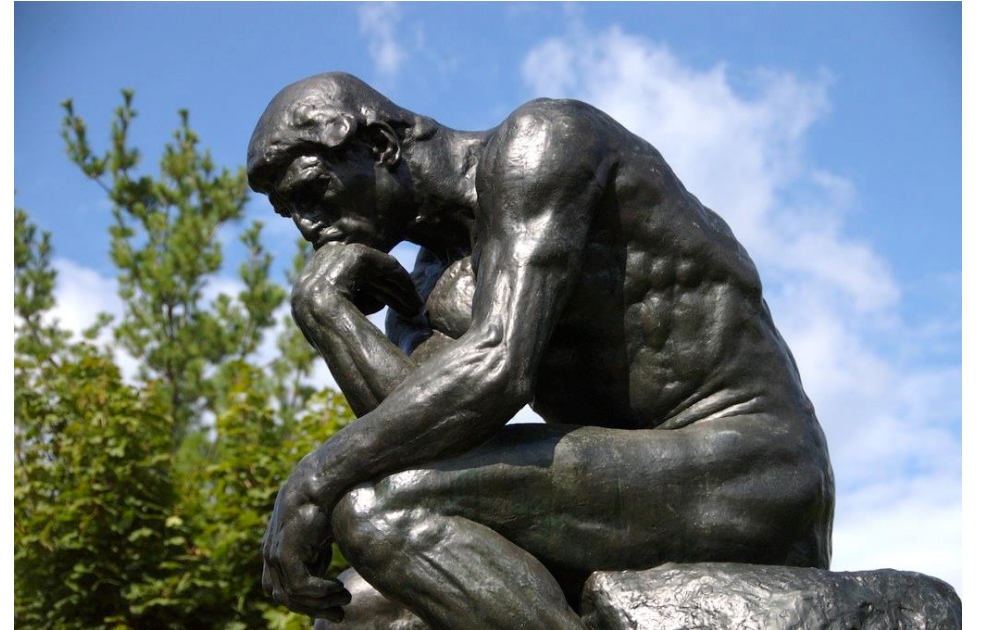


Recommended resources

- From your local library or bookstore:
 - ***The Nature Fix***, Florence Williams
 - *Your Brain on Nature*, Eva M. Selhub, MD and Alan C. Logan, ND (except nutrition chapter)
 - *Last Child in the Woods*, Richard Louv
 - *Forest Bathing*, Dr. Qing Li, MD, PhD, and President of the Japanese Society of Forest Medicine
 - *Let Them Eat Dirt*, B. Brett Finlay, PhD and Marie-Claire Arrieta, PhD (immune system)
 - *An Epidemic of Absence*, Moises Velasquez-Manoff (immune system)
- Online:
 - To access these talks: <https://www.uvic.ca/medsci/people/instructors/gair-jane.php> or search “Dr. Jane Gair”
 - ParksRx (B.C. Parks Foundation): <https://www.parkprescriptions.ca/>
 - Healthy By Nature: <https://www.healthybynature.ca/>
 - International Society of Nature and Forest Medicine: <https://www.infom.org/>

Q&A

- Comments or questions about what you just heard? About the talk series?
- Please feel free to email any questions or feedback to uvicmms@gmail.com.



Our final talk – next Tuesday

- See your registration confirmation e-mail to access the registration form, or use the link:
- <https://forms.gle/tAMb27gZunXL6gHk8>

Tuesday, June 1 - Prehabilitation (Preparation for Surgery): 9.30 - 11.30 AM

- Even if you are not expecting to undergo surgery soon, life can surprise you – consider attending!

Closing remarks

“Climb the mountains and get their good tidings. Nature's peace will flow into you as sunshine flows into trees. The winds will blow their own freshness into you, and the storms their energy, while cares will drop away from you like the leaves of Autumn.”

— John Muir, *The Mountains of California*



Closing remarks

- Thank you to Dr. Jane Gair, our supervisor for this activity, and to my classmates Julia De Pieri and Nicole Cameron, who have delivered several talks in this series and who help record our sessions

- Thank you for attending today!

