



EAZA Education Conference 2025

Wednesday Mar 19, 2025 / 10:45AM - 11:40AM

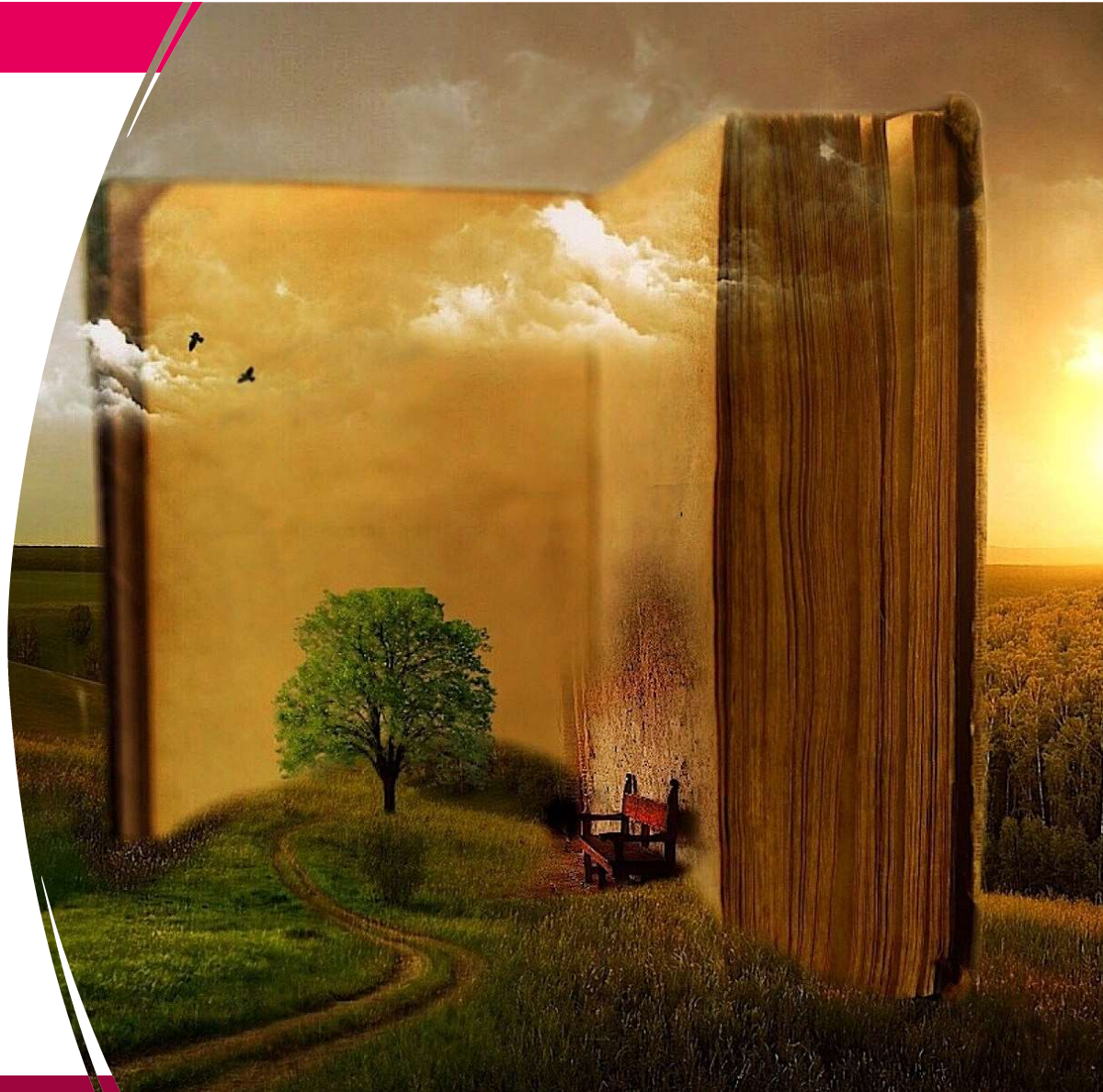
*“Towards a true Zootopia: The Role
of Zoos and their Wildlife in
Promoting Nature Connectedness ...”*



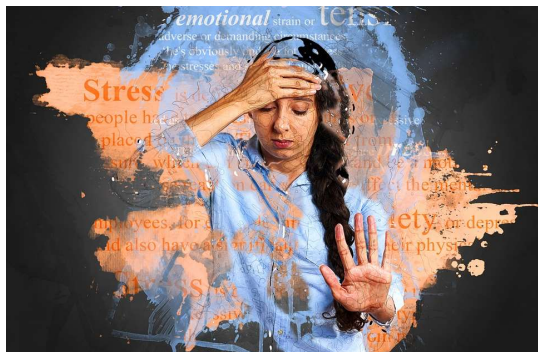
Ryan Lumber

What's Your Nature Story?

- What could you smell, touch or hear?
- What could you see?
- How did you feel?
- Did you feel that you and nature were similar? Did it inspire you to help it?
- How important was the experience to you?



Humanity in Crisis in 21st Century



The Human-Nature Disconnect

- Nature is important for our wellbeing, but do we feel part of it or separate from it?
- People in western societies tend to see themselves as separate from or even superior to the rest of nature that has been present as a cultural shift since 1950's ([Kesebir & Kesebir, 2017](#)) but its roots go far beyond this:
 - Monotheistic Religion
 - Industrial revolution
 - Positivist scientific method
 - Colonialism, misogyny, racism



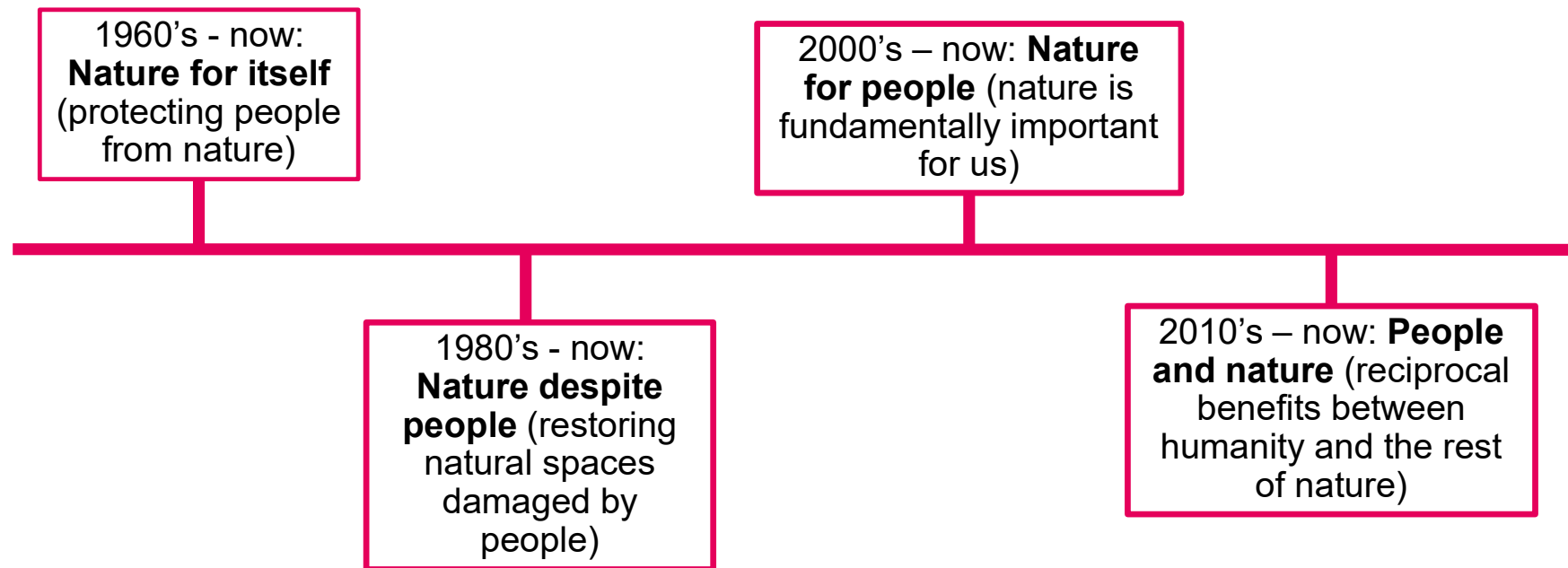


The Human- Nature Disconnect



- Impact of disconnect:
 - A factor in anthropogenic harm to the natural world ([Flikke, 2014](#))
 - Loss of environment and other species may have implications for our optimal functioning and mental health ([Maller et al., 2009](#))
 - Implications for people and their meaning/purpose in life
- There is a need for a new relationship for many people...

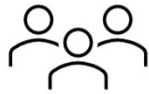
A Changing Focus (Mace, 2014)





Nature Connectedness

Disconnection from Nature



- Due to the possession of culture and technology, humanity no longer perceives itself to be a part of nature (**Human Exemptionism**) that can lead to environmental harm

Nature Connectedness

- **Nature Connectedness** is the counter to this disconnect, capturing a person's sense of their relationship with nature; feeling you are part of a wider natural community ([Mayer et al., 2009](#))
 - Different from simple contact/exposure to nature although the two are often conflated
 - It is a psychological construct that can be measured and changed
 - This has led to it being included in national surveys in the UK and internationally in the Gallup World Poll for wellbeing



A woman and a child are sitting in a shallow stream, playing in the water. The woman is holding a large green banana leaf over them, acting as an umbrella. The child is holding a woven basket. The scene is set in a lush, green environment with water splashing around them. The text "Why is Nature Connectedness Important?" is overlaid in the center of the image.

Why is Nature Connectedness Important?

Nature Connectedness

- Nature Connectedness has been consistently linked to good mental wellbeing ([Capaldi, Dopko, & Zelenski, 2014](#)) with
- Systematic review of 50 studies (n = 16,396) shows nature connectedness related to **feeling good & functioning well** ([Pritchard et al., 2019](#))
- Nature connection interventions showing to reduce symptoms associated with depression and anxiety ([Keenan et al., 2021](#)) with clinically significant improvements in quality of life ([McEwan et al., 2019](#))
 - Greater biodiversity leads to increased positive emotions ([McEwan et al. 2020](#))
 - Nature connection is a protective factor against poor mental health outcomes in young people ([Piccininni et al., 2018](#))

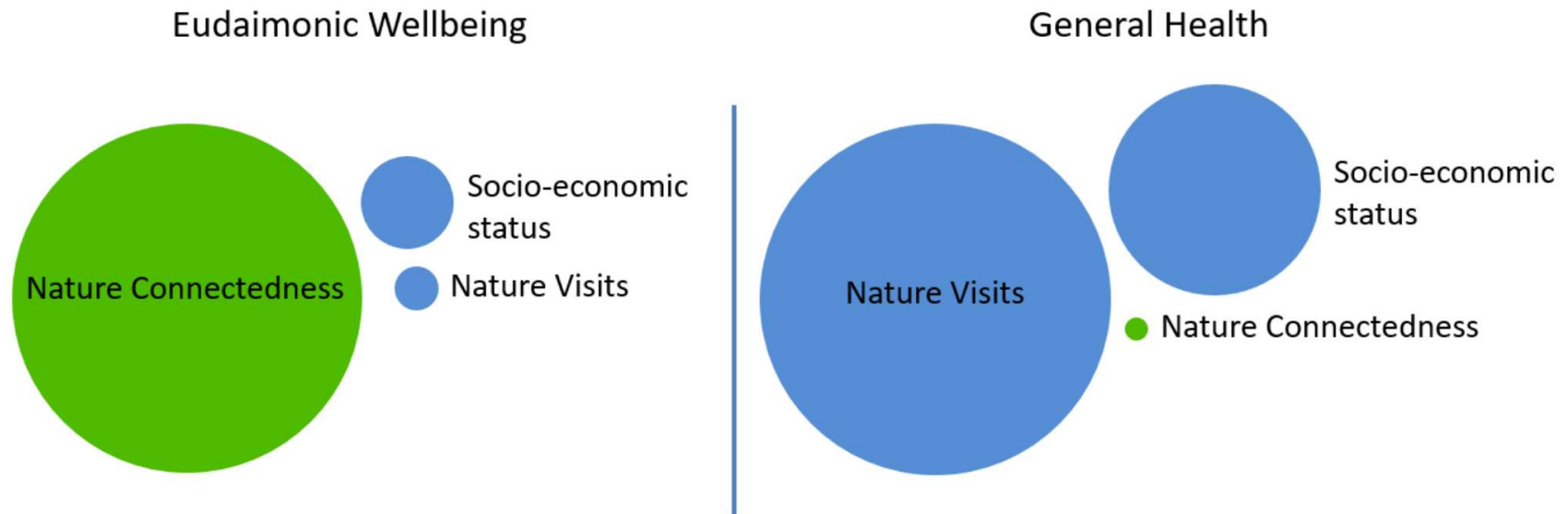
Nature for Wellbeing Across Cultures

- Forest areas engaged with via the cultural practice of Forest Bathing linked to reductions in physiological measures of stress ([Song et al., 2016](#))
- Nature is often a core part of well-being for indigenous cultures
 - Connection and belongingness to nature is part of Indigenous Australian's concept of well-being ([Sangha et al., 2015](#))
- Nature is not simply part of the therapeutic process but as an active partner in therapy to improve well-being and mental health ([Berger & McLeod, 2006](#))



Contact vs Connection for Wellbeing

Representative Survey of 4,960 adults in England ([Martin et al., 2020](#)):



Relative percentage difference in wellbeing and health as a function of nature contact, nature connectedness and socio-demographic comparators.

Pro-Nature Behaviours

- The land ethic (Leopold, 1949) originally inspired research interest in nature connectedness in that we need to care about something to want to protect it ([Mayer & Frantz, 2004](#))
- Study of children's environmental education found that environmental knowledge explained **2%** of ecological behaviour whereas nature connectedness explained **69%** ([Otto & Pensini, 2017](#))
- It is not surprising, as research suggests nature connection is not only associated with pro-environmental behaviours but causes it also ([Mackay & Schmitt, 2019](#)):
 - Martin et al. ([2020](#))
 - Whitburn et al. ([2019](#))
 - Anderson & Krettenauer ([2021](#))
- Other work has shown clear links between nature connectedness and pro-conservation behaviours ([Richardson et al., 2020](#))
- Nature connection vital for transformative social change in the recent [IPBES 2050 vision for biodiversity](#)

A young girl with brown hair is looking out a window. The window is covered in raindrops, and the view outside is a blurred landscape of green hills and trees. The girl is resting her chin on the windowsill, looking thoughtful and somewhat sad. The text "The Challenge of Nature Connection" is overlaid on the image in white, bold, sans-serif font.

The Challenge of Nature Connection

Rates of Nature Connectedness Across the World ([Richardson et al., 2022](#))

- [White et al. \(2021\)](#) in another study found those nations/regions with lower levels of Nature Connectedness (i.e. Hong Kong, California, Queensland, Ireland) share similar cultural values to UK and Canada

UK ranks lowest of 14 European countries for 'nature connectedness' and wellbeing

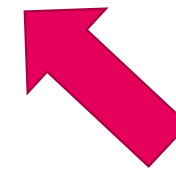
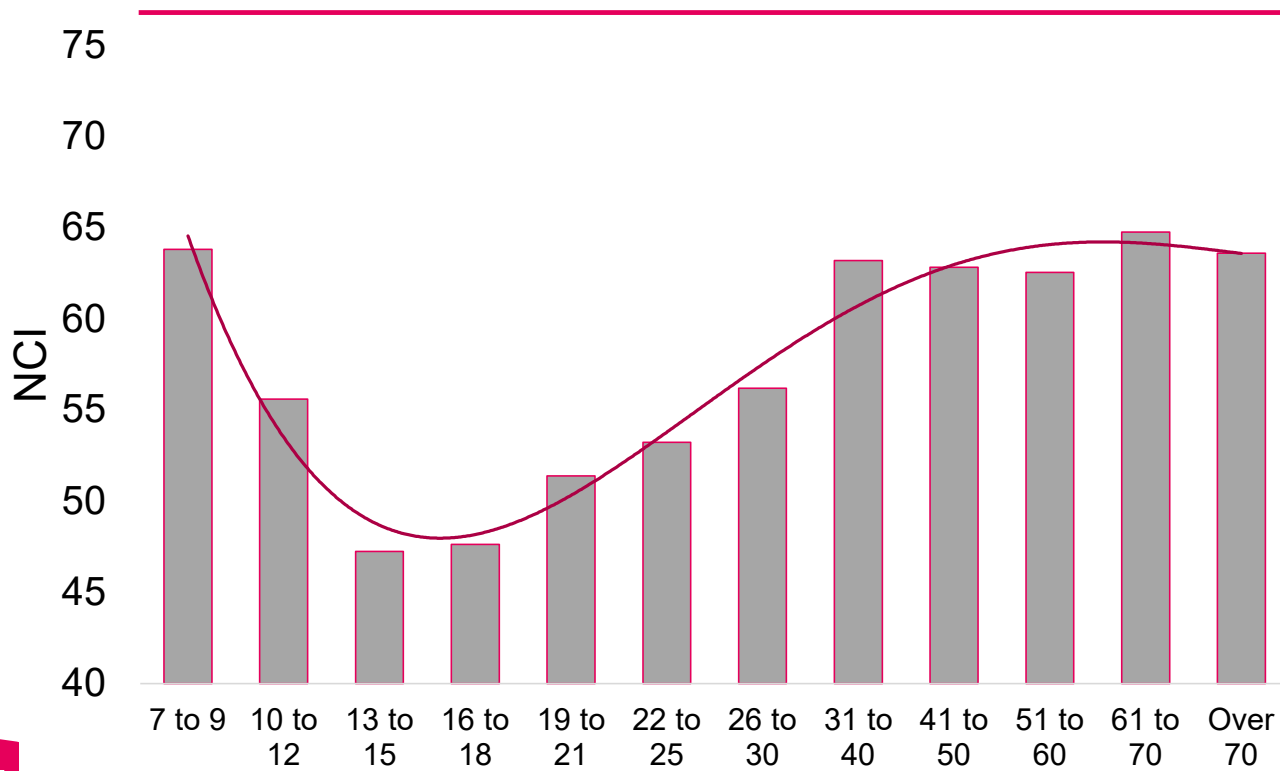
Numbers are scores given to each country based on the study

	Nature Connection	Biodiversity	Wellbeing
Italy	4.67	0.51	61
Portugal	4.63	0.51	65.13
Czech R	4.47	0.5	62.35
Bulgaria	4.43	0.49	63.94
France	4.36	0.42	61.97
Greece	4.35	0.55	63.45
Estonia	4.29	0.44	56.45
Spain	4.29	0.49	67.55
Germany	4.27	0.37	58.23
Netherlands	4.21	0.41	61.52
Finland	4.17	0.29	60.61
Sweden	4.05	0.3	58.97
Ireland	3.96	0.28	58.97
UK	3.71	0.32	54.13

Image taken from:

<https://www.theguardian.com/environment/2022/jun/23/britain-ranks-bottom-in-europe-for-nature-connectiveness>

Nature Connectedness Across the Lifespan



Higher levels found to predict pro-nature behaviours and better wellbeing

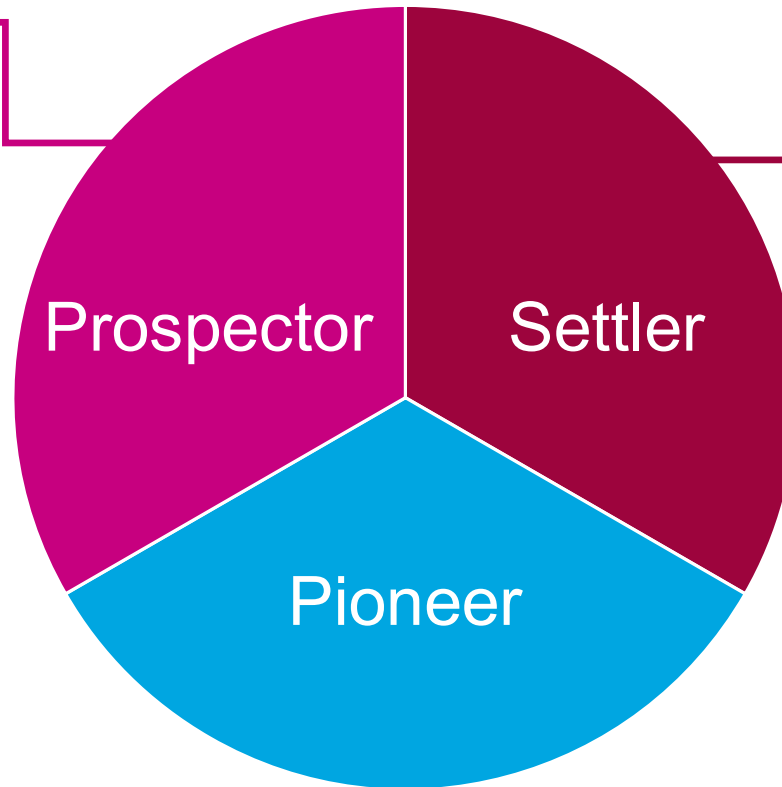
Richardson, M., Hunt, A., Hinds, J., Bragg, R., Fido, D., Petronzi, D., Barbett, L., Clitherow, T.J., and White, M. (2019). An Affective Measure of Nature Connectedness for Children and Adults: Validation, Performance and Insights. *Sustainability*, 11(12), 3250.

Technology, Boredom and Apathy

- Mobile phone use has a negative correlation with nature connectedness ([Richardson et al., 2018](#)) with even an urbanised phone background linked to lower levels of nature connection ([Chan et al., 2025](#))
 - ...but phone apps can help improve nature connection and mental health ([McEwan et al., 2019](#))
- Awe, inspiration and love (i.e. positive emotions) important for nature connection as is noticing nature and meaning-making...
 - ...However, boredom, disgust and irritation were barriers to nature connection while feelings associated with eco-anxiety were not (see [Lengieza et al., 2024](#))

Prospectors

- Driven by outer appearances, need for success and esteem of others rather than own self-esteem.
- Acquire and display symbols of success.



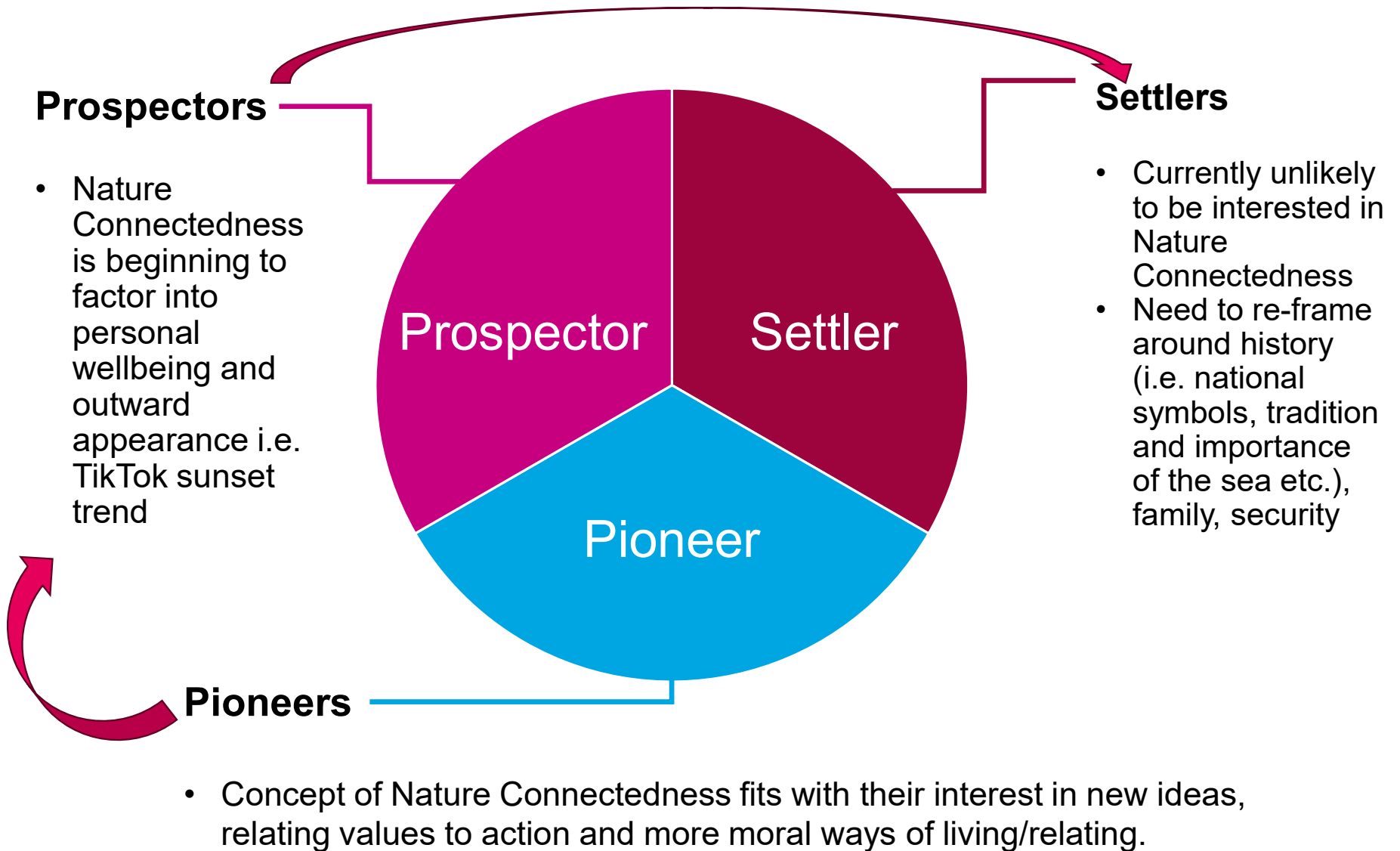
Settlers

- Driven by the need for safety and security, identity and belonging.
- Interested in keeping things small i.e. local, avoiding risk

Pioneers

- Inner directed, with a desire to connect their actions with values. Explore ideas and experiment.
- Interested in ethics, specific interests, networking and innovation.

See <http://www.cultdyn.co.uk/> for more on values and action.



A photograph of a person with long dark hair, seen from behind, reaching out to touch the bark of a large tree. The tree trunk is covered in moss and lichen. The background is a dense forest with green foliage. The text "How do we Reconnect with Nature?" is overlaid in white, bold font.

**How do we Reconnect
with Nature?**

The Pathways Framework (Lumber, 2016)



Senses

Tuning into nature through the senses



Compassion

Finding similarity with nature.
Caring and taking action



Emotion

Expressing your emotions for and through nature



Beauty

Noticing the beauty in nature



Meaning

Finding meaning in your life through nature

Pathways Research Findings

- The five pathways have been repeatedly shown to be important for nature connectedness:
- Lumber et al ([2017](#)) – more important than **learning and contact** with nature
- Richardson et al. ([2020](#), [2021](#), [2022](#)) – more important **than time spent in nature** and important for the wellbeing of all of nature (us included!) Also had a larger effect than marital status...



- 62% of people rarely or never listened to bird song or stopped to notice butterflies or bees



- 80% of people reported that they rarely or never watched wildlife, smelled wildflowers or drew/photographed nature



- Only 29% said they'd created a home for wildlife in the past year



- Only 6% celebrated natural events such as the longest day.

Pathways Research Findings

- Lumber et al. (in preparation) – more important than **learning about nature for connection** and **important for the things we do to protect/conserv** it
 - The pathways along with knowledge about nature important for pro-nature behaviours
 - The character strength of appreciation of beauty and excellence important for pro-nature behaviours also
- Interventions that draw on the pathways and character strengths are showing effectiveness in creating meaningful reconnections with nature ([Lumber et al., 2022](#); Passmore et al. in press, in preparation)
 - Probably due to the increased self-transcendence this can create

What's Your Nature Story?

- What could you smell, touch or hear? (**Senses**)
- What could you see? (**Beauty**)
- How did you feel? (**Emotion**)
- Did you feel that you and nature were similar? Did it inspire you to help it? (**Compassion**)
- How important was the experience to you? (**Meaning**)



Does the Order of the Pathways Matter?

- More work needs to be done on the exact order to engage people via the pathways.
- The work of [The Natural Academy](#) uses the following order to great success:
 1. Senses
 2. Beauty
 3. Emotion
 4. Compassion
 5. Meaning
- More work needs to be done testing the most effective order...

Where are the Pathways Used?

- Present in over 60+ organisations worldwide and growing:
 - **Heritage and Government:** National Trust, Natural England
 - **Conservation & Zoos:** Durrell Wildlife Conservation Trust & Jersey Zoo, Wildlife Trusts, New Zealand Department for Conservation, Chester Zoo, ZSL
 - **Mental Health & Wellbeing:** VIA Institute on Character, Forest Therapy Institute, Alderhay Children's Hospital, Natural Academy
 - **Education/Campaigns:** Scouts, Forest School providers, Generation Green, Rewild Yourself
- **Recommended by the U.N.'s [Stockholm +50 report](#) for use in environmental education**



Places of Reconnection: The Role of Zoos & Aquariums

Sites for Reconnection

- **Places of reconnection beyond the everyday experiences with nature**
 - A unique offering and role in nature connection > sites of special significance
- **Use of pathways to promote meaningful reconnection**
 - Can be done at the design/implementation stage
 - Not about reinventing what is already done but emphasising pathways in existing approaches
- **Importance of framing**
 - Avoid sole focus on knowledge (relational knowing is much more important than facts)
 - Understanding your audience and frames that engage rather than alienate are important

Durrell & Jersey Zoo: Butterfly Kaleidoscope

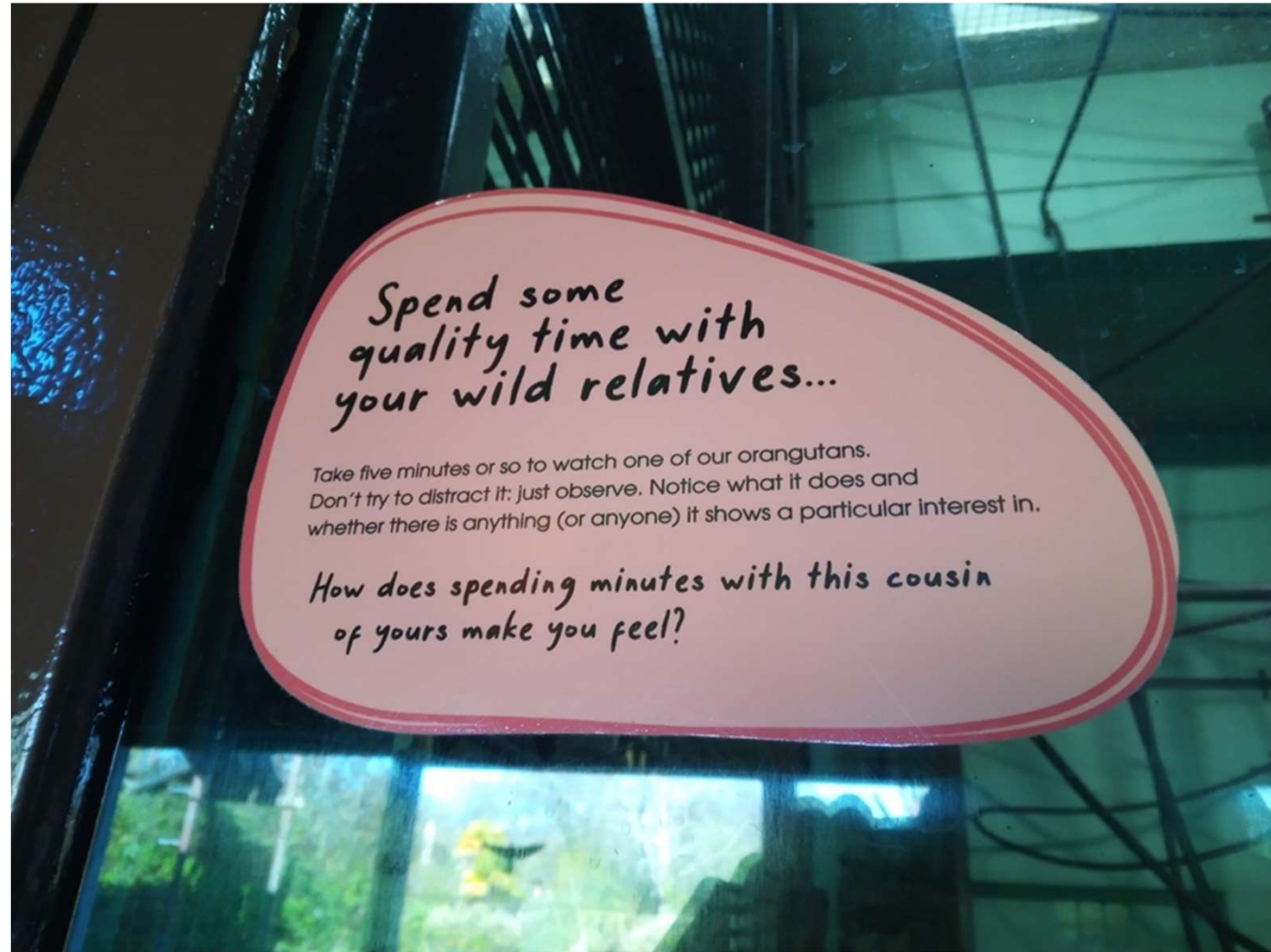
- Durrell were an early adopter of the pathways given their ambitions to help reconnect people with nature
- Drew upon the pathways when designing their new butterfly house
- Used minimal signage but emphasised pathways such as beauty
- Tapped into compassion by having an area at the exit relating to native plants and insects and what visitors could do to help conserve UK butterflies
- Surveys found an increase in admission, dwell time with visitors reporting they used beauty and emotion the most
 - [See more here: https://biaza.org.uk/projects/detail/butterfly-kaleidoscope](https://biaza.org.uk/projects/detail/butterfly-kaleidoscope)



Jersey Zoo: The Slow Trail

- Specifically drew upon the 5 pathways to encourage visitors to slow down and engage meaningfully with the zoo's trees, plants, native wildlife, landscapes and soundscapes - and, in some cases, to contemplate their resident zoo animals in a new light:
- Each Slow Trail sign was based around a single 'simple activity', such as:
 - Listening to the sound of a waterfall within the central valley area;
 - Noticing the patterns on the shells of the tortoises, and amongst the other residents of the reptile and amphibian house;
 - Smelling the fragrance of lavender and rosemary plants;
 - Choosing a favourite tree within the zoo's grounds;
 - Considering what olive trees meant to their founder (Gerry Durrell grew up in Corfu, and today there is a collection of olive trees planted in front to the zoo's manor house).

Jersey Zoo: The Slow Trail



Jersey Zoo: Signage

- Jersey wanted to build upon elements such as the slow trail by adapting the general signage around the zoo:
 - Species ID signs for White-naped cranes, which focussed on the symbolic meaning of cranes in Asian culture (**Meaning**), and encouraged visitors to listen for their sonorous calls (**Senses**);
 - Species ID sign for orangutans, which encourage visitors to reflect on how their own purchasing decisions can help protect orangutan habitats (**Compassion**);
 - Individual biography signs for our Aldabra tortoises, which used the personal stories of particular tortoises to help to establish an emotional connection (**Emotion**) between visitors and this species

Jersey Zoo: Signage



Jersey Zoo: Art in Nature

- Programme for visiting schools includes a session called 'Art in Nature', which allows school children of all ages to handle biological artefacts and then use them to inspire artwork. Over the course of the last three years, this session became increasingly well-subscribed.
- The session deliberately takes a non-didactic approach, being based instead on allowing students to explore the objects that inspire them, giving them the time and resources to reproduce their **beauty** in pencil, chalk, charcoal or other media.



Jersey Zoo: Other Initiatives

- **Tortoise Takeover Trail:** 50 large tortoises commissioned from artists and placed across Jersey with a further 50 young tortoises made by schools and community groups decorated with their own personal **Meaning**. For example, a tortoise sculpture painted in colours belonging to the Forget-Me-Not flower, which was created by the Jersey Dementia Group.
- **Sensory table:** Allowing visitors to have tactile contact with biological materials relating to their resident animals, who they'd not otherwise be able to have any tactile contact with (e.g., tortoise shell fragments, flamingo feathers, the shed skin of snakes...)
- **Schools4Species Wales:** Reintroducing the White-tailed Eagle and the European Wildcat to Wales, this initiative places a very strong emphasis on developing stronger cultural connections with these long-absent species and embedding them back into Welsh culture through activities such as journalling and art competitions.

Case Example: Derby Museum

- Redesign of their natural history exhibit
- Focus on joy and curiosity
- Visitors completed a simple short survey on arrival looking at how they preferred to engage with exhibits
- Recommended a card they could take with them that had suggested activities they could do drawing on the pathways



Closing Remarks

- The pathways offer a framework to help engage and reconnect visitors in a meaningful way above other approaches
 - Flexible frames rather than prescriptive ways/activities
 - Feeds into everything we do and the best way of knowing nature relationally
 - Be careful about frames that are used however; know your audience and where they might be with their relationship to the rest of nature
- More research is needed on the specific role of zoos and aquariums and how the pathways can be best implemented
 - Do not underestimate the impact you can have and the reconnection opportunities that your sites offer

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Thank you