

Exploring the biodiversity–health nexus: how to present biodiversity characteristics to patients in order to foster dialogue in clinical practice?

Aline SIGRIST¹

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Background: Biodiversity and primary care

- **Nature's health benefits recognised**

- **Ecosystem services:** regulation of water, air and climate.
- **Physical and mental health benefits:**
 - ↓ Mortality (cardiovascular, respiratory, cancer)
 - Positive impact on immune function
 - Mental health benefits

Aerts, Honnay et al. 2018; Barboza, Cirach et al. 2021; Marselle, Hartig et al. 2021 Nguyen, Astell-Burt et al. 2023

- **Nature exposure is rarely addressed in healthcare practice as key health determinant**

- Lack of awareness and prescriptions among health professionals

Foley, Leach et al. 2023; Robinson, Jorgensen et al. 2020

Key issues

- How do patients **perceive biodiversity**?
- Patients' knowledge and understanding of **local biodiversity vs. objective data** (high-res. maps)
- How do patients **perceive biodiversity-health connections**?
- How to better **integrate nature-based approaches into clinical practice in primary care** to support health and well-being ?

Methods

- **Approach**

- Qualitative, inductive, Switzerland-Belgium.

- **Data collection**

- 42 patients semi-structured interviews (1-1.5 hours).

- **Local biodiversity mapping**

- Species/Vegetation mapping, biodiversity modelling.

- **Data analysis**

- Transcription
- Coding and thematic analysis (MAXQDA, NVivo)
- Cross-analysis (BE-CH)

Profiles (n=42)		
Categories		Participants
Gender	Female	25
	Male	17
Location	Urban	18
	Semi-urban	5
	Rural	19
Age	18 – 35	9
	36 – 55	10
	56 – 75	20
	> 76	3

Mapped biodiversity

- **Study parameters**

- **300 m radius** around patients' homes
- **Comparison with 1,000 households**

- **Index used**

- Plant/vegetation density (NDVI)
- Observed species richness (citizen science monitoring sites)
- Vegetation cover (BE)
- Modelled species richness (CH)

NDVI

NDVI moyen (Index de végétation NDVI)



0.10

0 = No vegetation. 1 = Very dense vegetation.

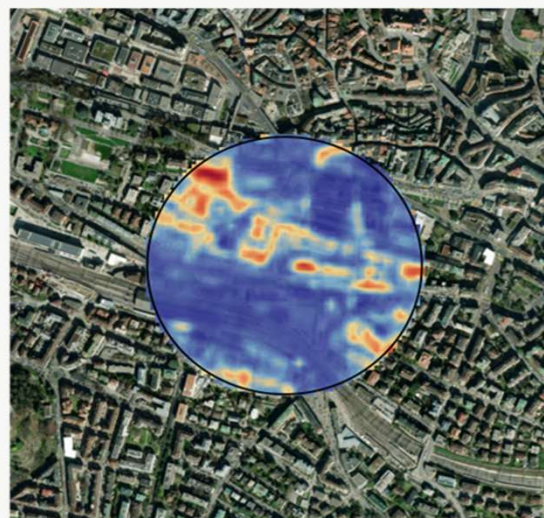
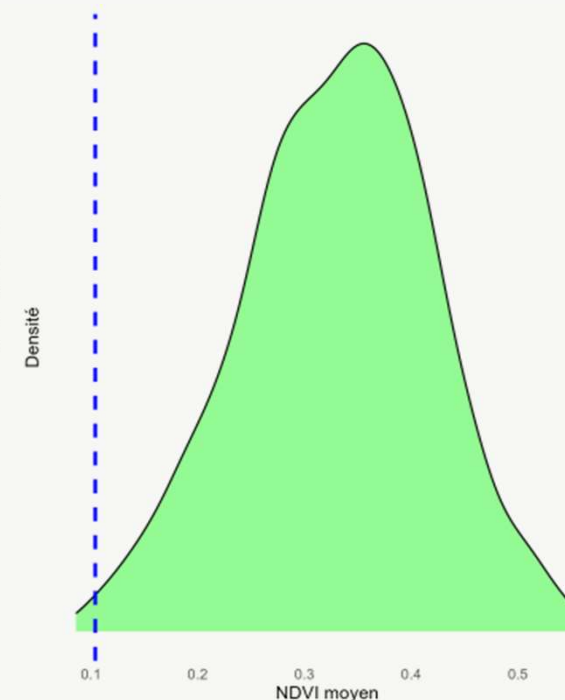


Fig 1: Vegetation cover 300m around home

0 = No vegetation cover.

1 = High vegetation cover.



The vegetation cover around your place of residence is 0.10 (on a scale of 0 to 1, where 0 corresponds to a total absence of vegetation and 1 to very dense vegetation). **This indicates that you are located in a low-vegetation area.**

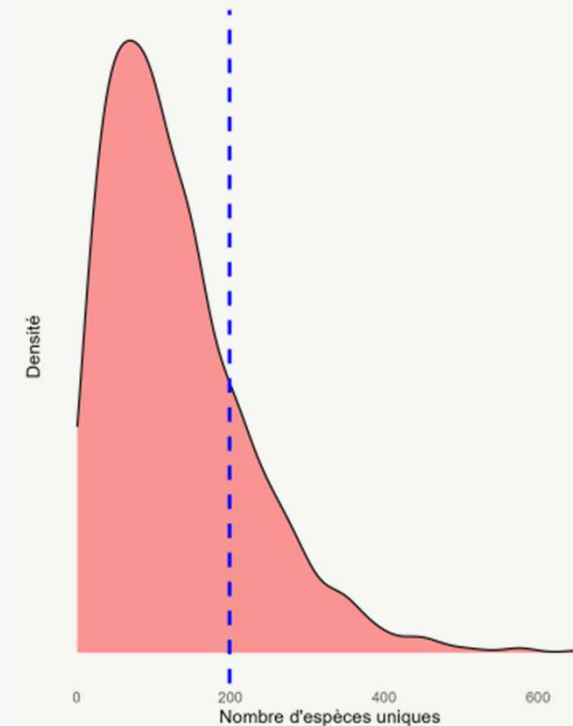
Compared to 1,000 other residential locations in the canton, the vegetation cover around your home is **significantly below the average (0.31%)**.

Observed species richness (citizen science monitoring sites)



Figure 1 : Observed species chart

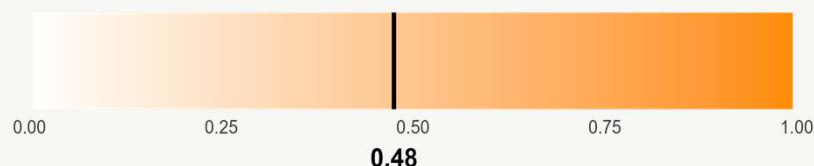
Around your home, **199 species** have been observed.



Compared to 1,000 other residences in the canton of Vaud, **a significantly higher than average number of species (80%)** has been observed around your home.

Modelled species richness (CH)

Richesse en espèces potentielles



0 = No species. 1 = Maximum potential species diversity.

The potential species richness around your home is estimated at **0.48, which corresponds to moderate richness**. This value ranges from 0 (no species predicted) to 1 (maximum predicted diversity).

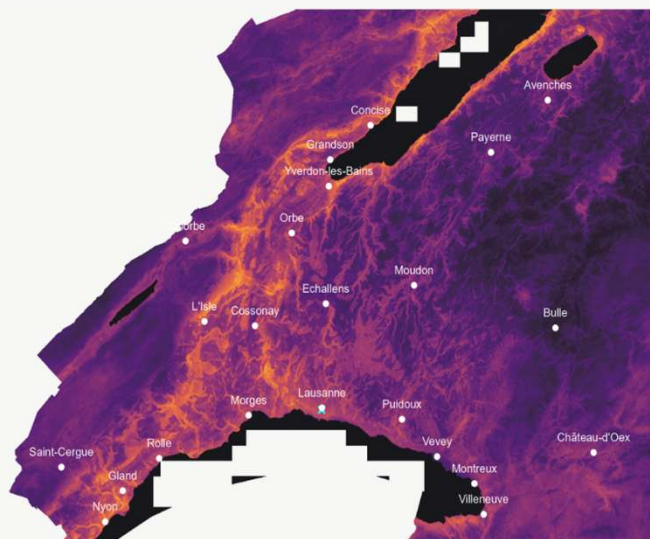
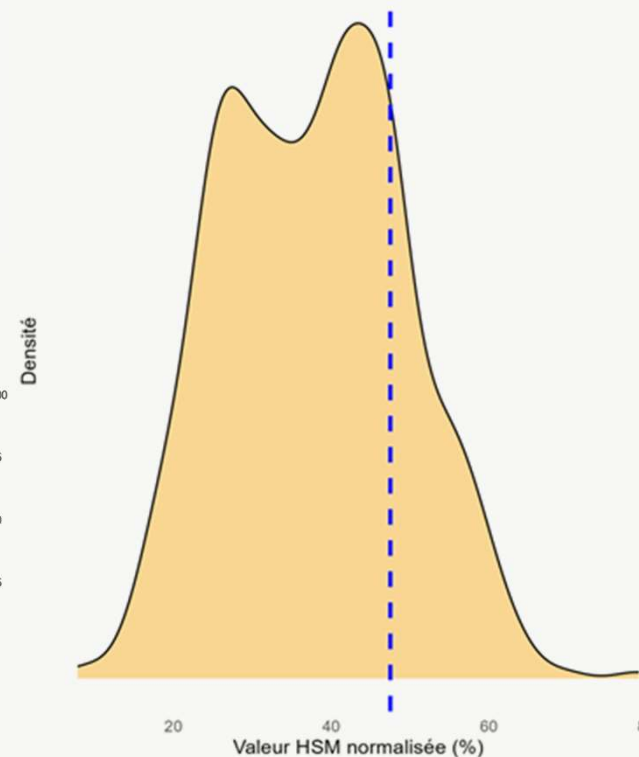


Fig 2: Modelled species richness : Canton de Vaud
0 = No species.

100 = Maximum potential species diversity



Compared to 1,000 living locations in the canton, **your living location ranks among the top 25% richest (79%)** in species in the canton.

Vegetation cover (BE)



The **green space coverage** around your place of residence is **29%**. Compared to 1,000 other homes in Wallonia, this coverage is **significantly below the average (17th percentile)**.

Patients' perceived biodiversity

- **Biodiversity perceived as an abstract and technical concept**

*"I don't use it much. I find it really **technical**." (M, 65)*

*"Biodiversity, it's...I **don't really know what it is**, exactly. ... It's already green." (W, 76)*

- **'Biodiversity' = 'nature', 'ecology', 'environment'**

*"For me, it's part of all the **ecological fights**." (W, 22)*

*"For me, it's about **respecting nature**." (W, 75)*

- **'Patients shift toward 'contact with nature,' which is more tangible and refers to concrete experiences**

=> "Biodiversity" is rarely part of everyday language. Patients naturally gravitate toward more familiar terms

Patients' daily experiences of nature

- **Nature's sensory and aesthetics dimensions**

*"In the forest, what I also **find soothing is the sound** (...) of the **water** or the sound of the **wind in the trees**, the tree screaming. I find these are **sounds that calm you down, that make you feel good.**" (M, 26)*

- **Different types of natural environments...**

*"If I end up in a meadow or open areas, it's less important to me. **It's really the forest that relaxes me**, that calms me down." (M, 40)*

- **...and practices**

*"I **cycle**. I just got back yesterday from a week of cycling. I do **ski** touring in winter. It's almost a daily practice, **walking** or being active... **in nature.**" (M, 69)*

*"I also like, let's say, **going into nature** as well... it's that you **also meet people** in the end, and you also **have a certain contact with people**, dog walkers, walkers in general..." (W, 42)*

*"Yeah, it's also a moment where you kind of reconnect with yourself, you know? You just switch off. After a day of work, **you spend an hour in the garden.**" (M, 40)*

Perceived impacts of nature on health

- **Benefits of nature exposure on mental health and well-being**

"Going for a walk in the woods, that's my medicine (...) it calms me down. (...) The quiet. The quiet and the air. I mean, just being out in the open." (W, 55)

"Working in my garden (...) it relaxes me. And because of that (...) there's less lactic acid in my joints, my back hurts less. It's all connected. Then, the effects on health are huge - less anxiety, less stress (...) My gut health improves ." (W, 63)

=> Bringing varied nature encounters into primary care biodiversity practices

=> Rely on patients' individual experiences

Patients' understanding of Biodiversity Metrics (maps)

- **3 biodiversity indices: too scientific and less accessible**

- Difficulty reading maps and interpreting biodiversity metrics

*"The concept of **potential species richness** feels quite abstract to me." (M, 60)*

- **Patients show greater interest in concrete information**

- Comparison of green spaces/biodiversity amount (%)
- Species observed
- Classifications of species decline

From Biodiversity Metrics to Patient Understanding

- **Biodiversity/nature knowledge perspective**
 - Experiential and place-based knowledge
 - Built through direct interactions with local environments
- **Human health perspective**
 - Individual nature-based practices > *"self-medication"* for mental health
 - Not prescribed by health professional
- **Human-nature relationship perspective**
 - Nature engagement for health benefits varies across individual:
 - Sensitivities
 - Local environment
 - Activities
 - Personal and family background

Bridging Biodiversity and Well-Being: From Data to Action

- **Translate maps into "Well-being indicators"**
 - Link ecological metrics to concrete health benefits
- **Connect data with lived experiences**
 - Use maps to enrich patient narratives and highlight the value of biodiversity
- **Co-create hybrid maps**
 - Interactive maps combining:
 - Ecological data (diversity, density)
 - Patient testimonials (perceived benefits)
 - Well-being indicators (e.g., "calming zone," "social space")

=> Make data accessible and actionable for patients and health care providers

Conclusion

- **Biodiversity: a technical and abstract concept for patients → shift towards more accessible terms**
- **Maps and metrics indicators are difficult to grasp**
- **Patients show greater interest in concrete, sensitive and individual experience-based information**

=> Interdisciplinary collaboration between biology, medicine, and anthropology is key, requiring practical tools to connect disciplines, communities, and practitioners.

Thank you for your attention !

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