

According to the World Health Organization (WHO), “*peace with nature*” is a pillar of well-being.

The diversity of concepts that lie behind the word “nature”

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Will the concept of “*harmony with nature* [1]” guide us towards better health for humans? The idea has been gaining ground in recent years. The World Health Organization (WHO) calls on countries to preserve nature, the source of human health [2], highlighting that “*peace with nature*” is a pillar of well-being [3] (see figure 1). Meanwhile, the European Union is funding scientific projects that aim to “*develop a common framework to improve recognition of and promote contact with nature* [4]”.

So what is nature? This widely used term can have very different meanings, be they static or dynamic, including or excluding humans [5]. For example, WHO defines nature as “*the entirety of the physical and biological world not made by humans* [6]”, although it may be influenced by

humans. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) points out that the role of humans in this description varies according to different systems of thought. For example, in the context of Western science, nature encompasses biodiversity, ecosystems, the biosphere and evolution; this definition emphasises the notion of “*ecosystem services*”, namely, the goods and services that nature provides to human societies and that are necessary for it to function [7]. In the context of other knowledge systems, the definition of nature may carry a more spiritual meaning associated with an entity such as Mother Earth (planet Earth as the entity that sustains all living beings) and include an explicit recognition of an interdependent relationship between humans and nature [7].

In France, 114 indicators measure biodiversity

Western scientists prefer to use the term “biodiversity”, which they consider more precise and quantifiable than “nature”. Biodiversity describes the diversity and variability of living organisms (plants, animals, fungi, microbes) and ecosystems, which are communities of living beings interacting with non-living elements in their environment. This diversity and variability span a range of notions such as species diversity, genetic diversity within a species, behavioural diversity, distribution of species within ecosystems and ecosystem functioning [7]. Unlike nature, biodiversity can be measured using various quantitative and qualitative indicators applied to the different notions described above. To understand the scale of the task,

KEY POINTS

▣ **What is nature? Although widely used in everyday language, this term covers a more complex set of meanings than it would seem, with differing interpretations depending on the cultural system of thought. Western scientists prefer to talk about the more precise and quantifiable concept of biodiversity. A growing body of research is attempting to shed light on the links between nature and human health.**

we can start with the following numbers: around two million different species are known on Earth, but the Muséum national d’Histoire naturelle (the French Natural History Museum) estimates there may in fact be between eight and twenty million. Figure 2 illustrates the richness and diversity of living organisms that have resulted from a shared evolutionary history. In mainland France, there are around 6,000 species of vascular plants (with stems, leaves and roots) and 3,000 non-vascular plants, nearly 40,000 species of invertebrates and 1,500 species of vertebrates. Biodiversity in the French overseas territories is both exceptionally rich and unique. The overseas territories together host more species in all groups than mainland France. There are 35 times as many plants, three times as many molluscs and 70 times as many endemic birds¹ in the overseas territories than in mainland France. While mainland France counts no endemic mammals or reptiles, the overseas territories are home to around 100 such mammal species and ten reptile species [8].



Figure 1 – World Health Organization campaign on social media, 2023.



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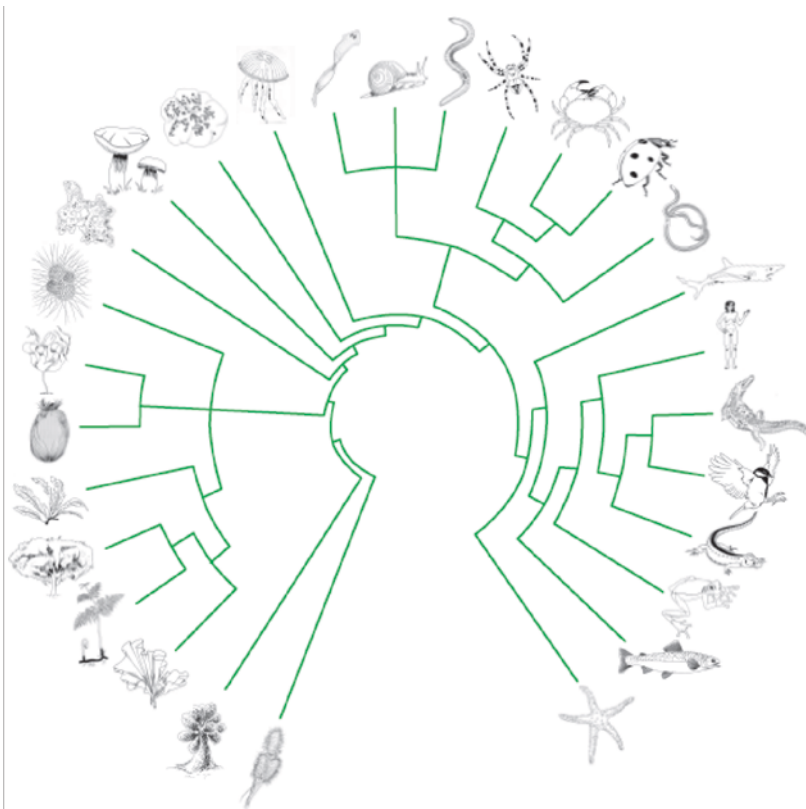


Figure 2 – The tree of life represents the main groups of living organisms: each branch of the tree represents a group of living organisms and each node of the tree represents an ancestor common to these groups. © G. Lecointre, J.-F. Desjournet, MNHN.

The French Office for Biodiversity (OFB) monitors 114 indicators to define the state of biodiversity in France and how it is changing, providing information not only on particular species (e.g. the disappearance of butterflies in certain departments of mainland France), but also on environmental pollution (e.g. changes in the physical and chemical pollution of waterways) or behaviour (e.g. the changing use of plant protection products in agriculture) [9].

A considerable potential impact on health

“Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity [10]”, according to WHO. Bringing together nature and health implies finding a common ground between two very broad terms, both of which are highly dependent on the cultural and social context. Given the dimensions of biodiversity, the potential number of influences it could have on human health are considerable. Currently, published works on “nature

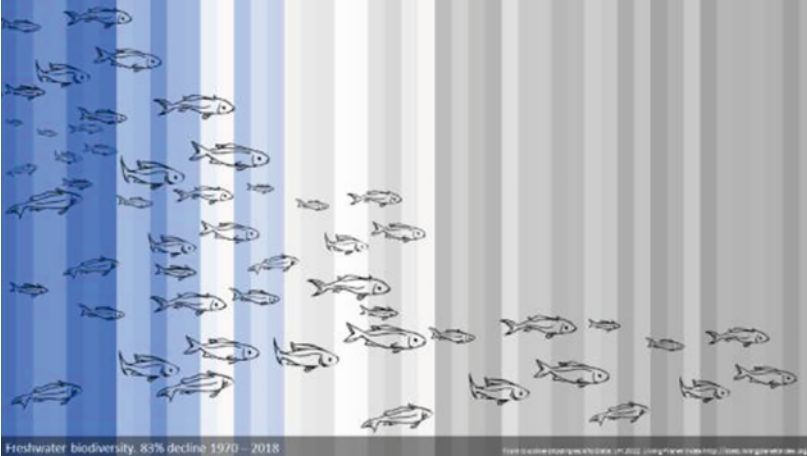


Figure 3 – Decrease in biodiversity in freshwater rivers between 1970 and 2018. Online: biodiversitystrips.info (Living Planet Index database, 2022, www.livingplanetindex.org [22]).

and health” or “biodiversity and health” can be classified into three main categories:

The study of spaces considered as “natural” in which biodiversity is broadly overlooked

These are usually outdoor spaces in urban areas, where there is vegetation or water. For example, the literature review *Nature and Health* by Hartig *et al.* actually concentrates on “nature as represented by aspects of the physical environment relevant to planning, design, and policy measures that serve broad segments of urbanised societies [11]” Another literature review by Nejade *et al.* considered studies targeting “engagement with natural outdoor environments [12]”. Such spaces may in fact be entirely human-made (urban green spaces, gardens, etc.).

The study of interactions, whether intentional or not, reciprocal or not, between human populations and one or more non-human, wild or domestic species

When these studies view an interaction as a risk, they often cite particular species: for example, the *Aedes albopictus* mosquito is designated as the vector of the chikungunya virus. When an interaction is perceived as beneficial, studies tend to refer to unspecified generic groups: planting “trees” in Philadelphia would reduce

mortality [13] or “pets [14]” could reduce loneliness among elderly people in care homes.

Studies of the “ecosystem services” that are fundamental to health

This approach takes into account the way in which ecosystems, on the one hand, contribute to operating the “Earth system” (e.g. the major biogeochemical cycles, such as water or carbon cycles), and on the other hand, provide raw materials useful to

human societies (food or intangible resources that feed the human imagination) [6; 15]. These contributions are considered to be free services provided by nature to humans. Today, the main services taken into account are supply and production services, regulation services and cultural services: for example, a forest will supply wood, regulate the local climate and store carbon dioxide (CO₂), provide a place for walkers and be a source of inspiration for artists.

How should we view interdependencies?

The scientific community still has a great deal of work to do to define, conceptualise and study the links between nature, biodiversity and health. Two propositions for conceptual approaches are “One Health” and “Planetary Health”.

- **One health** is a concept that emerged at the turn of the 21st century. The One Health High-Level Expert Panel (OHHLEP), founded in 2021, defines it as an “integrated and unifying approach that aims to sustainably balance and optimise the health of people, animals and ecosystems. It recognises that the health of humans, domestic and wild animals, plants and ecosystems are closely linked and interdependent [16].” It should be noted



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that in France the 4th National Environmental Health Plan (PNSE) adopts a different terminology and definition, stating that the “*concept of One Health [...] constitutes the basis of health ecology and a field of research concerned with the interdependencies between ecosystem functions, socio-cultural practices and the health of human, animal and plant populations taken together*” [17].

● **Planetary Health**, a concept introduced by the NGO Friends of the Earth in the 1980s and taken up by the scientific journal *The Lancet* in 2015, is a call for interdisciplinary work recognising the interdependence between humans and the planet, which seeks solutions for living in good health while respecting the limits of our planet [18]. It is largely based on the *Ottawa Charter for Health Promotion* [19], considered a founding text of Planetary Health [18].

To our knowledge, there is no official definition of nature associated with One Health and Planetary Health. However, in practice, One Health seems to be more concerned with quantitative measures of biodiversity. Planetary Health is moving towards a more holistic definition of nature, recognising the value of indigenous knowledge (viewing interdependencies through a different prism to that of modern Western science) and giving an important place to psychological and social implications. For the time being, the two have differing scopes, with One Health placing greater focus on zoonotic diseases², while Planetary Health looks at the environmental and social determinants of health [20].

Reflecting on the meaning of these words, their link with health, their contradictions and the implicit values

that underpin them, means thinking more broadly about our way of living in relation to the other species that inhabit the Earth. At a time when these species are disappearing rapidly (see figure 3) and the climate crisis is spiralling out of control, we must be wary of letting words disembodiment reality. “*Man has reached the point on this planet where he is looking for all the friendship he can find. In his solitude, he needs all the elephants, all the dogs, all the birds*” [21]. ■

1. Natural species present only in a defined geographical area.

2. Infectious diseases transmitted from animals to humans. (Editor’s note.)

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