

Reporting Summary

Nature Portfolio wishes to improve the reproducibility of the work that we publish. This form provides structure for consistency and transparency in reporting. For further information on Nature Portfolio policies, see our [Editorial Policies](#) and the [Editorial Policy Checklist](#).

Statistics

For all statistical analyses, confirm that the following items are present in the figure legend, table legend, main text, or Methods section.

n/a	Confirmed
☐	☒ The exact sample size (<i>n</i>) for each experimental group/condition, given as a discrete number and unit of measurement
☒	☐ A statement on whether measurements were taken from distinct samples or whether the same sample was measured repeatedly
☒	☐ The statistical test(s) used AND whether they are one- or two-sided <i>Only common tests should be described solely by name; describe more complex techniques in the Methods section.</i>
☐	☒ A description of all covariates tested
☐	☒ A description of any assumptions or corrections, such as tests of normality and adjustment for multiple comparisons
☐	☒ A full description of the statistical parameters including central tendency (e.g. means) or other basic estimates (e.g. regression coefficient) AND variation (e.g. standard deviation) or associated estimates of uncertainty (e.g. confidence intervals)
☒	☐ For null hypothesis testing, the test statistic (e.g. <i>F</i> , <i>t</i> , <i>r</i>) with confidence intervals, effect sizes, degrees of freedom and <i>P</i> value noted <i>Give P values as exact values whenever suitable.</i>
☐	☒ For Bayesian analysis, information on the choice of priors and Markov chain Monte Carlo settings
☒	☐ For hierarchical and complex designs, identification of the appropriate level for tests and full reporting of outcomes
☒	☐ Estimates of effect sizes (e.g. Cohen's <i>d</i> , Pearson's <i>r</i>), indicating how they were calculated

Our web collection on [statistics for biologists](#) contains articles on many of the points above.

Software and code

Policy information about [availability of computer code](#)

Data collection	Prior to quantification of the Bayesian Belief Network, data were formatted and explored in R version 4.4.0 (R Core Team 2024).
Data analysis	The Bayesian Belief Network was developed and analysed using Netica version 7.11 (Norsys Software Corporation 1998).

For manuscripts utilizing custom algorithms or software that are central to the research but not yet described in published literature, software must be made available to editors and reviewers. We strongly encourage code deposition in a community repository (e.g. GitHub). See the Nature Portfolio [guidelines for submitting code & software](#) for further information.

Data

Policy information about [availability of data](#)

All manuscripts must include a [data availability statement](#). This statement should provide the following information, where applicable:

- Accession codes, unique identifiers, or web links for publicly available datasets
- A description of any restrictions on data availability
- For clinical datasets or third party data, please ensure that the statement adheres to our [policy](#)

The Bayesian Belief Network file that supports the findings of this study is available in Figshare with the identifier <https://figshare.com/s/63ac8597986bc3d81e2f>. It can be used to replicate findings or for adding new data (belief updating). The individual datasets that were used to operationalise the Bayesian Belief Network are tied to their respective studies, which are cited in the manuscript and listed in the Supplementary Information (p. 84). Whether data is readily available via depositories or has to be requested from owners, depends on the study.

Human research participants

Policy information about [studies involving human research participants and Sex and Gender in Research](#).

Reporting on sex and gender

This research is a synthesis of multiple existing studies. While inter-individual variation among human research participants was not the focus of the current research, some of the constituting studies did consider gender- or sex-related differences. This is the case for a study on forest effects on mental wellbeing (Rozario et al. 2024 in People and Nature) and a study on subjective thermal comfort (Gillerot et al. 2024 in Landscape and Urban Planning). Detailed reports on sex and gender considerations can be found in the respective published papers.

Population characteristics

Same as above.

Recruitment

Same as above.

Ethics oversight

Same as above.

Note that full information on the approval of the study protocol must also be provided in the manuscript.

Field-specific reporting

Please select the one below that is the best fit for your research. If you are not sure, read the appropriate sections before making your selection.

☐ Life sciences ☐ Behavioural & social sciences ☒ Ecological, evolutionary & environmental sciences

For a reference copy of the document with all sections, see nature.com/documents/nr-reporting-summary-flat.pdf

Ecological, evolutionary & environmental sciences study design

All studies must disclose on these points even when the disclosure is negative.

Study description

This is a synthesis study based on existing studies that were based on the international Dr.FOREST project. A Bayesian Belief Network was used to analyse overall trends arising from this heterogeneous dataset, including synergies and trade-offs between health effects following exposure to forest environments.

Research sample

The common research sample was a network of ten forest sites located in Austria, Belgium, France, Germany and Poland for a total of 164 forest stands and 18 target tree species, representative for temperate forest conditions in Europe. They cover both experimental forest plantations and mature natural forest stands.

Sampling strategy

Stand selection assured an equal number of monospecific stands and mixtures, to enable the identification of tree species diversity effects. Stands also varied in species composition and structure. No sample size calculations were done on beforehand for the current research because individual studies took this into account according to their specific assumptions.

Data collection

Data collection procedures can be found in the individual studies that are cited in the manuscript and the supplementary information. Data were shared directly with us via the respective corresponding authors of those studies.

Timing and spatial scale

Data cover five European countries: Austria, Belgium, France, Germany and Poland. For each country one or multiple sites were selected, each constituted of a network of forest stands considered representative for the region. Data were collected throughout the overarching project, from Spring 2020 until Autumn 2023. Details on the exact timing and spatial scale can be found in each individual study that is cited in the manuscript and the supplementary information.

Data exclusions

No data were excluded.

Reproducibility

Not applicable.

Randomization

The forest stands that were used are part of larger networks (FunDivEUROPE and TreeDivNet) that randomised species composition and spatial positioning at the time of planting (for experimental sites) or selection (for natural sites).

Blinding

Blinding was applied whenever necessary in the individual studied (e.g. see Rozario et al. 2024 in People and Nature).

Did the study involve field work?

☐ Yes ☒ No

Reporting for specific materials, systems and methods

We require information from authors about some types of materials, experimental systems and methods used in many studies. Here, indicate whether each material, system or method listed is relevant to your study. If you are not sure if a list item applies to your research, read the appropriate section before selecting a response.

Materials & experimental systems

n/a	Involved in the study
☒	☐ Antibodies
☒	☐ Eukaryotic cell lines
☒	☐ Palaeontology and archaeology
☒	☐ Animals and other organisms
☒	☐ Clinical data
☒	☐ Dual use research of concern

Methods

n/a	Involved in the study
☒	☐ ChIP-seq
☒	☐ Flow cytometry
☒	☐ MRI-based neuroimaging