



# Human–nature connection: a multidisciplinary review

Christopher D Ives<sup>1,2</sup>, Matteo Giusti<sup>3</sup>, Joern Fischer<sup>2</sup>,  
David J Abson<sup>2</sup>, Kathleen Klaniecki<sup>2</sup>, Christian Dorninger<sup>2</sup>,  
Josefine Laudan<sup>2</sup>, Stephan Barthel<sup>3,4</sup>, Paivi Abernethy<sup>2,5</sup>,  
Berta Martín-López<sup>2</sup>, Christopher M Raymond<sup>6</sup>, Dave Kendal<sup>7</sup>  
and Henrik von Wehrden<sup>2</sup>

In sustainability science calls are increasing for humanity to (re-)connect with nature, yet no systematic synthesis of the empirical literature on human–nature connection (HNC) exists. We reviewed 475 publications on HNC and found that most research has concentrated on individuals at local scales, often leaving ‘nature’ undefined. Cluster analysis identified three subgroups of publications: first, *HNC as mind*, dominated by the use of psychometric scales, second, *HNC as experience*, characterised by observation and qualitative analysis; and third, *HNC as place*, emphasising place attachment and reserve visitation. To address the challenge of connecting humanity with nature, future HNC scholarship must pursue cross-fertilization of methods and approaches, extend research beyond individuals, local scales, and Western societies, and increase guidance for sustainability transformations.

## Addresses

<sup>1</sup> School of Geography, University of Nottingham, University Park, Nottingham NG7 2RD, United Kingdom

<sup>2</sup> Faculty of Sustainability, Leuphana University, Lueneburg, Germany

<sup>3</sup> Stockholm Resilience Centre, Sweden

<sup>4</sup> University of Gävle, Sweden

<sup>5</sup> Royal Roads University, Victoria, BC, Canada

<sup>6</sup> Department of Landscape Architecture, Planning and Management, Swedish University of Agricultural Sciences, Sweden

<sup>7</sup> School of Ecosystem and Forest Sciences & Melbourne School of Design, The University of Melbourne, Australia

Corresponding author: Ives, Christopher D  
([chris.ives@nottingham.ac.uk](mailto:chris.ives@nottingham.ac.uk))

Current Opinion in Environmental Sustainability 2017, 26–27:  
106–113

This review comes from a themed issue on **Open issue, part II**

Edited by **Eduardo S Brondizio, Rik Leemans and William D Solecki**

Received: 22 November 2016; Accepted: 28 May 2017

<http://dx.doi.org/10.1016/j.cosust.2017.05.005>

1877-3435/© 2017 Elsevier B.V. All rights reserved.

## Introduction

The relationship between people and nature has attracted rising interest among scientists, given evidence of health and well-being benefits from human interaction with nature [1,2,3<sup>••</sup>] and its contribution to addressing sustainability challenges [4,5<sup>•</sup>,6]. Indeed, while humanity is ultimately dependent on natural resources, the urgent need for human populations (particularly those in the West) to be reconnected to nature or embedded within ecological limits has been recently emphasised by many sustainability scientists [7,8<sup>•</sup>,9–12]. These calls for (re-)connection to and embeddedness within nature have implied more than physical dependence, but active development of cognitive, emotional and biophysical linkages that positively shape human–nature interactions. Research on this topic has been characterised by a plurality of disciplinary and conceptual perspectives, language, methods and research approaches. With this heterogeneity, the literature has become fragmented, compromising the consolidation of ideas and their application to practice. A first step towards consolidation is to generate a coherent overview of existing scholarship.

In reviewing this literature, clear terminology is critical. We adopt the term ‘human–nature’ connection (HNC) as an umbrella concept, encompassing a broad range of terms from different disciplines and applications [13<sup>•</sup>], for instance connectedness with nature [14] or nature relatedness [6] in environmental psychology and (re-)connection to the biosphere [7,11] in sustainability science. Some reviews of HNC have emerged recently [3<sup>••</sup>,5<sup>•</sup>,15], but they are couched within particular disciplinary perspectives and use narrow definitions of ‘connection’. In this study we elected not to prescribe a strict definition of ‘nature’, but were guided by the perspective of articles reviewed. Reviewed literature reported on places, landscapes and ecosystems that are not completely dominated by people, but also include non-human organisms, species and habitats. With this review we intend to provide a multidisciplinary space for academic and cultural integration, extension and cross-fertilization.

We report the findings of systematic review of scholarly publications from a range of disciplinary backgrounds that

have empirically investigated HNC. We sought to first, assess the diversity of subjects, methods and motivations of research on HNC; second, identify clusters of papers and their distinguishing characteristics; and third, consider how future research on HNC can better inform sustainability science.

## Methods

The Scopus database was queried with a search string comprised of 41 components that combined a variety of terms related to 'nature', 'people' and 'connection' (see Supplementary appendix 1a for full search string). The search was applied to Abstract, Title and Keywords on 16 November 2015 and returned 3849 papers, which was reduced to 2649 after restricting results to articles in English. Only English literature was selected because of the difficulties in systematically reviewing literature across multiple languages (e.g. the necessity of reviewers subjectively translating concepts into a common language, and the loss of meaning or misinterpretation this would likely entail). Articles were screened to ensure they were peer reviewed and published in an academic journal, reported on empirical data (i.e. excluding reviews, conceptual papers or critical commentary), and studied a type of relationship people have with green or natural environments (full inclusion criteria provided in Supplementary appendix 1b). We note that since the review focussed on articles studying connections between people and nature, literature that assumed this connection but did not address it explicitly (e.g. some research in forestry or agriculture) was not included. Screening returned a final set of 475 papers published between 1984 and 2015 (Supplementary appendix 2).

Each paper was coded for: (i) descriptive information about the article (e.g. country, journal and discipline); (ii) conception of 'nature'; (iii) social group analysed (e.g. individuals versus communities); (iv) class of HNC(s) studied; (v) methodological details; and (vi) the purpose of the study. Response categories for all questions were developed iteratively by the author team. The final typology distinguished between five classes of HNC: material (e.g. resource extraction), experiential (e.g. activities), cognitive (e.g. attitudes, values), emotional (e.g. fear, joy) and philosophical (e.g. ontological frameworks) (see Supplementary appendix 1c for full details and definitions). The first 10% of papers were coded by multiple authors, and response categories were clarified where inconsistencies were found.

Data on all reviewed publications were analysed in R [16] to generate descriptive statistics, multivariate clusters, and an ordination. Agglomerative hierarchical clustering was performed using the 'agnes' function in the 'cluster' package using a Euclidian measure of dissimilarity and Ward's clustering method. 'Indicator species analysis' was used to identify which variables most influenced these

groups using the 'indval' function within the 'labdsv' package. Ordination of data was performed via Detrended Correspondence Analysis using the 'decorana' function in the 'vegan' package.

## Results

### Overview

Research on HNC is increasing (Figure 1), with 345 papers (72.6%) published from 2010 onwards. Non-descript or 'unspecified' forms of nature were most commonly studied (30.9%), followed studies on human connections to urban nature (14.1%), and protected areas (11.9%) (Figure 2). Most HNC research targeted individuals (76%), especially local people (24.3%). Most research has studied cognitive (35.9%), experiential (22.0%), emotional (21.8%), and philosophical (13.9%) connections to nature, whereas material connections (6.5%) have received less attention (Figure 2). Most studies addressed one (161 papers; 33.9%) or two (169 papers; 35.6%) types of HNC, 97 papers (20.4%) studied three types of connections, 38 papers (8.0%) four types, and 10 papers (2.1%) studied five types of connection.

### Methodological patterns

Empirical research on HNC has been biased towards western countries. The top five countries represented were USA (152 papers; 32.0%), Australia (54 papers; 11.4%), Canada (42 papers; 8.8%), United Kingdom (27 papers; 5.9%) and The Netherlands (22 papers; 4.6%). HNC has been mostly observed (87.8%), rather than experimentally tested (12.2%), using quantitative (48.8%), qualitative (32.0%), or mixed datasets (19.2%) (Figure 2).

Similar numbers of studies explored HNC as a predictor variable (31.2%), response variable (26.7%), or both a predictor and response (17.3%), suggesting that scholars have been equally interested in the drivers and effects of HNC. However, 24.8% of papers studied HNC as a variable in itself (i.e. neither as a predictor nor response). Substantial proportions of studies used psychometric scales (24.6%) or assessed place attachment (28.6%). Psychology was the most represented discipline in the literature (29.4%), followed by the social sciences (21.4%), environmental disciplines (15.2%), tourism (10.4%), education (10.3%), planning (7.0%), and health (6.4%).

### Multivariate analysis

Cluster analysis revealed three distinct subgroups of publications (Figure 3), characterised by different indicator variables (Table 1). We labelled the clusters as follows: *HNC as mind* (145 papers), *HNC as experience* (178 papers), and *HNC as place* (152 papers). The fastest growth in research over time occurred in publications in the *HNC as mind* cluster (Figure 1), characterised by studies that address cognitive and philosophical aspects of HNC at the individual level. These studies commonly investigated

Download English Version:

<https://daneshyari.com/en/article/5115380>

Download Persian Version:

<https://daneshyari.com/article/5115380>

[Daneshyari.com](https://daneshyari.com)