



Exploring spiritual values in forest management practices in the Netherlands

Catharina de Pater^{a,*}, Bas Verschuuren^a, Sonja Greil^b, Arjen Wals^c

^a Forest and Nature Conservation Policy Chair group Wageningen University and Research, P.O. Box 47, NL - 6700 AA Wageningen, the Netherlands

^b Wageningen Plant Research, Wageningen University and Research, P.O. Box 16 6700 AA Wageningen, the Netherlands

^c Education and Learning Sciences, Department of Social Sciences, Wageningen University and Research, PO Box 8130, 6700EW Wageningen, the Netherlands

ARTICLE INFO

Keywords:

Forest management
Forest spirituality
Nature conservation
Spiritual values
The Netherlands

ABSTRACT

While forest-related spiritual values (forest spirituality) have long been incorporated in global forest-related policies and strategies, the significance of spiritual values in forest management *practices* remains little researched. This study investigates how spiritual values are articulated in forest management practices in the Netherlands. We applied a conceptual framework with 10 spiritual dimensions derived from religious scholarship to qualitatively explore the roles of these dimensions in practical forest management. Data were collected by interviewing public and private foresters across the Netherlands and analysed following a constructivist-interpretivist approach. As a result, we found four themes in which forest spirituality is articulated in management practices. Firstly, forests are increasingly used for ritual practices aimed at spiritual enrichment and health, with different consequences for public and private forest management. Secondly, ontological and relational considerations affect several forest management practices. These are mainly related to diverging views on tree felling and educational programmes aimed at nature connectedness. Thirdly, forest spirituality is expressed in local legends and historical monuments, deployed to raise the public's interest in forests. Fourthly, ineffable aspects of spirituality emerge in references to unspecified spiritual experiences and occasional cases of intuitive forest management. We conclude that forest spirituality -entangled with broader 'ecospiritual' trends in society- is not only significant for nature experience but also -increasingly- for ritual and healing practices in forests, for connectedness with nature and for forest use such as tree planting and felling. In particular, public foresters increasingly have to reconcile their management with the 'spiritual' ideas and practices of a diversifying public.

Introduction

This paper aims to understand forest-related spiritual values or 'forest spirituality' in short, (Roux et al. (2022)). Spiritual values have long been incorporated in global forest-related policies and strategies (MPFE, 2002; IUFRO, 2007), but the role of spiritual values in practical and applied aspects of forest management and conservation is only slowly being recognized. Globally, conservation of spiritual values is mentioned in certification standards (PEFC, 2018; FSC, 2022, 2023) and in area-based conservation guidelines (Verschuuren et al., 2021). Sub-globally, spiritual values have long been associated with the domain of Indigenous peoples in the Global South, while their role in forest and nature conservation in the Global North has only recently started to receive recognition in research (e.g., Chandran and Hughes, 2000; Stara et al., 2015; Frascaroli and Fjeldsted, 2019; Govigli et al., 2021;

Plieninger et al., 2023). At regional and local levels, literature indicates that spiritual values are increasingly included in forest management plans (De Pater et al., 2023) and practices (Hedlund-de Witt, 2011; Torralba et al., 2020). There have also been attempts to position forest spirituality in relation to the management and well-being of forests. Roux et al. (2022), for example, proposed a transition hypothesis for forest spiritual values (forest spirituality), analogous to forest transition theories that postulate a decline and subsequent comeback of the world's forests (Mather, 1992; Angelsen, 2013 [2007]). They hypothesize that forest spirituality was originally omnipresent, then became subdued by formal religion and rational thinking, but is now coming back again in a 're-spiritualization of nature.' Nonetheless, there is a lack of systematic empirical assessment of forest spirituality across cultures and societies. The empirical evidence and conceptual underpinning of forest spirituality remains underdeveloped which hampers both its

* Corresponding author.

E-mail address: catharina.depater@wur.nl (C. de Pater).

<https://doi.org/10.1016/j.tfp.2024.100522>

Received 12 November 2023; Received in revised form 21 February 2024; Accepted 24 February 2024

Available online 8 March 2024

2666-7193/© 2024 The Author(s). Published by Elsevier B.V. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

theoretical formation and its practical application in forest policies and management.

Furthermore, constraining the conceptual development of spiritual values to overarching theoretical approaches, such as ecosystem services assessment further limits our understanding of their role in forest management. The Ecosystem services theory struggles to conceptualize spiritual values as part of cultural 'services', for example. (Chan et al., 2012; Cooper et al., 2016), The IPBES Nature's Contributions to People (NCP) framework moved beyond this commodity-oriented approach by focusing on diverse values and the valuation of nature (Pascual et al., 2022; Raymond et al., 2023). Based on, inter alia, relational value theory developed by Chan et al. (2016) it attaches equal importance to diverse knowledge systems and the ontologies and values – including spiritual values – that underpin them. However, while the NCP framework is a highly valuable instrument for policy it does not provide for structuring detailed empirical research into the nature of spiritual values and their role in forest management. A valuable contribution to fill this gap was made by Govigli and Bruzzese (2023) who reviewed literature on participatory methods for assessing emotional and spiritual forest attachment. However, their study focuses on participatory methods for the assessment of emotions and spiritual values among forest users (individuals and communities). This is different from examining the nature of forest spirituality itself and how it influences forest management, for which no framework was available until the publication of De Pater et al. (2021) (see Section 2.1).

This paper focuses on the occurrence and significance of spiritual values in forest management practices in the Netherlands. The country covers 33,839 km² of land area, and is among the world's most densely populated countries (416 people per km²). A large and increasing part of the population (16.4 million¹) lives in urban areas. Forests cover 365,000 ha or 11 % of the country's land area and consist of coniferous and deciduous forests. Almost half of the forests are owned by national and local government, another third is private property, and 20 % is owned by large nature conservation organizations. Most of the national forest (94,000 ha) is managed by the State Forest Service (Staatsbosbeheer). The largest nature conservation organization is Natuurmonumenten, which owns 30,000 ha of forest (Schelhaas et al., 2022). Most forests are managed for multifunctional purposes, combining nature conservation for biodiversity and climate purposes with recreation, nature experience and responsible resource use (Natuurmonumenten, 2022; Staatsbosbeheer, 2023). Most forests are open to the public and recreational pressure is increasing. Citizens' involvement in forest governance has long been at a low level (Van Bommel et al., 2008; Buijs et al., 2011), but recent debates about tree felling, 'rewilding' projects and the re-settlement of the wolf in Dutch forests have kindled public emotions in the last decade. These debates are compounded with threats to biodiversity, such as nitrogen deposition, droughts caused by climate change, invasive exotic species and spatial fragmentation by building projects. All these issues represent an increasingly complex context for forest managers.

Forest managers (or for short, foresters) are here defined as land-owners and/or professionals who have formal responsibilities for the management of a forest area. In the Dutch context we distinguish two types of forest managers: 1) 'public' forest managers, i.e., those managing forests owned by institutions such governmental bodies or nature associations, who are ultimately – even if sometimes remotely – bound to their employers' directives; 2) private forest owners and/or managers, who may or may not be professionally trained, but can make their own decisions on management, including applying spiritual insights if they want. Forest management – by both categories – is influenced by stakeholders, i.e., specific sections of the public such as visitors, local residents, companies, policymakers, etc.

In the Netherlands, as elsewhere in Europe, forest management is increasingly becoming a participatory process in which multiple stakeholders are involved. Stakeholders view the forest each from their own perspective; they are motivated by different sets of perceptions and values, including, possibly, spiritual values (Wiersum and Sands, 2013; Staatsbosbeheer, 2015a, 2023; Focacci et al., 2017). They are involved in forests in various ways; they voice their views in planning consultations, but they also visit the forest in increasing numbers, especially during the COVID-19 pandemic (Derks et al., 2020, Ministerie LNV and IPO, 2020, Natuurmonumenten, 2021). Indications are that an increasing number of visitors seeks spiritual enrichment and relief from stress in forests and nature (Pedroli and During, 2019; Pichlerová et al., 2021; Govigli and Bruzzese, 2023; Roux et al., 2023). In addition, a new category of stakeholders is emerging: those who offer spiritual guidance and services in the form of nature coaching, meditation, forest bathing, outdoor therapies, shamanic ceremonies, natural burials, and other spiritual practices in or near forest and nature areas. We do not know what these apparently increasing and diversifying spiritual demands imply in terms of consequences for the forest's ecology and management responses from foresters.

Foresters must take their own as well as the multiple value sets of stakeholders' into account to make their work effective (Buijs et al., 2011; Buijs and Lawrence, 2013; Wiersum and Sands, 2013; Verschuuren et al., 2021; see also Driver et al., 1999). If, as Roux et al. (2022) hypothesize, forest spirituality is on the rise, it would increasingly appear in these value sets. Although this increase has not been thoroughly researched, a brief scoping of the field in the Netherlands indicates that spiritual enrichment in forests and nature is indeed important to a diverse group of stakeholders as well as forest managers (Verhoeven, 2015). A large-scale inventory of cultural ecosystem services throughout Europe by Torralba et al. (2020) confirmed this. More important than the trend, however, is that we do not know much about how forest spiritual values influence foresters' work, how these values are articulated in forest management practices and what, in this respect, foresters' needs are. Understanding the articulation of spiritual values in forest management practices may add to the effectiveness and sustainability of these practices.

This research aims at a better understanding of the significance of forest spirituality in forest management practices in the Netherlands through addressing the following research questions:

- RQ 1: What types of forest spirituality, if any, affect public and private foresters' management practices?
- RQ 2: How does forest spirituality influence public and private foresters' practices?
- RQ3: What are the implications of a better understanding of forest spirituality in forest management practices?

Theoretical foundation

In this section we discuss how we conceptualize spiritual values, especially in relation to forest and nature (2.1). We then explain what we understand by forest, forest management, and forest practices, and discuss various conceptualisations of these terms.

Conceptualization of spiritual values of forests

We characterize spiritual values relating to forests (forest spirituality) as "hard-to-define forest-based values that help maintain and renew the human and non-human spirit" which can be further characterised as 'immaterial', 'ethereal', 'hard to measure' or 'psychologically deep' (Driver et al., 1999 cited in De Pater et al., 2021). We adopt this broad definition to adequately capture the wide variety of spiritual phenomena attributed to forests by humans as well as the diversity of spiritually inspired relationships between humans, forests, and non-human beings (Terhaar, 2005; De Pater et al., 2008, Verschuuren et al., 2021;

¹ As per 2022. <https://www.macrotrends.net/countries/NLD/netherlands/urban-population> [Accessed 14 November 2023].

Raymond et al., 2023). The boundaries of this definition are not sharply defined, but neither are other non-exclusive definitions of spirituality. Likewise, the definitional boundaries between ‘spirituality’ and ‘religion’ are confused. We therefore do not make a sharp distinction between ‘religion’ and ‘spirituality’, although we appreciate that such a distinction matters in specific contexts. For our study it is important to capture as much as possible the complete range of spiritual and religious phenomena affecting forests and forest management, whatever terminology is used by the actors. In this article we use the term ‘spirituality’ rather than religion, as it is more commonly used in relation to nature and forest, and less suggestive of denominational boundaries.

We draw upon scholarship from religious studies for ontologically unbiased and non-essentialist underpinning of forest spirituality in our research (Von Stuckrad, 2003). Following Saler (2000 [1993]) and Taylor (2010), we apply the ‘family resemblances approach’ (FRA) (Fitzgerald, 1996) which accommodates all spiritual traditions on an equal basis and enables us to accept all phenomena as ‘spiritual’ as long as they are engaged with this ‘hard-to-define’, non-tangible ‘core’ (Driver et al., 1999). Furthermore, we use Smart’s theory of ‘seven dimensions of religion’ (Smart, 1996, 2002) to find analytical units for research. In line with the FRA, Smart placed all religions and spiritualities on an equal footing and distinguished seven ‘dimensions of religion’, respectively: (1) the practical and ritual dimension; (2) the experiential and emotional dimension; (3) the narrative and mythical dimension; (4) the doctrinal and philosophical dimension; (5) the ethical and legal dimension; (6) the social and institutional dimension; and (7) the material dimension. Phenomena may encompass one or more dimensions and a dimension could be strongly or weakly represented in a phenomenon.

In a previous study, we applied Smart’s multidimensional approach to the construction of a conceptual framework for research into forest spirituality (De Pater et al., 2021). In constructing this framework, we split Smart’s experiential-emotional dimension into several sub-dimensions to accommodate the wide variety of nature experiences found in literature. We thus created a framework with nine dimensions, four of which are specifications of Smart’s Experiential dimension. In this research, we applied these nine dimensions. However, in the interview phase, some interviewees referred to nature experiences and their potential for spiritual enrichment and other unspecified references to spiritual phenomena which could not be accommodated by one of the nine dimensions. In order not to lose information, we therefore added a “zero” dimension to accommodate quotes about unspecified spirituality by the interviewees. This was in line with our interpretivist approach. It also proved to be useful in a former study on forest management plans (De Pater et al., 2023). As a result, our conceptual framework contains the following dimensions:

0. Experiential-Unspecified (unspecified, potentially spiritual experience in nature).
1. Experiential-Aesthetic dimension (experience of self-transcending awe and sublimity in nature).
2. Experiential-Relational dimension (deep connectedness with the forest, trees or the land in general).
3. Experiential-Restorative dimension (experience of refreshment, renewed energy and health).
4. Experiential-‘Life force’ dimension (intuitive sensing of subtle, life/vital energies in forests, trees or landscapes in literature (e.g., Ivaikhiv, 2005) known as ‘Earth energy’ or ‘Earth mysteries’).
5. Practical-Ritual dimension (formal or less formal actions in forests often aimed at developing spiritual awareness or ethical insights).
6. Narrative-Mythical dimension (vital stories: myths, legends, histories, oral or written, about creation, one’s place on earth, saints and heroes, etc.).
7. Philosophical-Ethical dimension (intellectual underpinning of experiences, rituals, narratives and ensuing ethics and behaviour).

8. Social-Institutional dimension (institutionalizing spiritual values in social organizations, agreements, activities, and education).
9. Material-Spiritual dimension (physical phenomena with spiritual significance, here limited to buildings and movable items, because the whole landscape has a material dimension).

Conceptualization of forests, forest management and practices

Forests are here defined as “Land spanning more than 0.5 hectares with trees higher than 5 m and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ” (FAO, 2018:4). In the Dutch policy context, forests are categorized under the broad umbrella of ‘nature’, and we therefore include non-forested terrestrial nature areas in our definition. Furthermore, we define forest management as “the whole of human activities steering the structure, composition and dynamics of the forest ecosystem in order to realize anticipated objectives of the owner and/or manager” (adapted from Vellema and Maas, 2003:1 and Den Ouden et al., 2010:21). Nowadays forest management is usually predicated ‘sustainable’, i.e., aiming “to maintain and enhance the economic, social, and environmental values of all types of forests, for the benefit of present and future generations” (UNGA, 2008). In this study we refer to forest management with a specific focus on ‘on-the-ground’ forest management *practices*, which entail “operational strategies, technical interventions, communication and other field-based action” (adapted from Arts et al., 2013:3). Spirituality can be manifested in the way practical actions are performed, but also –perhaps more so– in the motives for these actions, the perspectives of the actors, the actions’ intended results, and the way practices are communicated with others. ‘Communication’ is an integral part of forest management in the Netherlands, as “recreation, experience and education” are important objectives (Ministerie LNV and IPO, 2020:12). These practices are in the first place conducted by the foresters, who are therefore the main group of participants in our research. We investigate with them whether and how the various dimensions of forest spirituality are articulated in practice. We thereby identify not only the abovementioned spiritual dimensions, but also more specific attributes of these dimensions, to reveal the detailed nature of spiritual values.

Lastly, we also examine contextual factors when they emerge, such as other actors (human and non-human) and their actions in forests. We do not pre-define these categories but leave it to the research participants to specify them.

Methodology and methods

Methodology

The explorative character of the study justifies a cross-sectional study design (Kumar, 2014) combining qualitative and quantitative methods. We positioned our research within an interpretivist research paradigm acknowledging that our knowledge of reality is a social construction by human actors. This paradigm suits research seeking explanations, not from an ‘objective’ point of view, but within the frames of reference of all actors involved. It also requires the researchers themselves to critically reflect on their own interpretation of the data (Schwartz-Shea and Yanow, 2012; Ponelis, 2015).

The geographical scope of the study is confined to forests in the Netherlands. Primary data were generated from interviews with public and private foresters from across the Netherlands (see Table 1 for details). As for analysis of the interviews, methodical steps derived from grounded theory were applied which allowed systematic qualitative – and, partly, quantitative – interpretation and analysis of the data (Johnson, 2014; Mills et al., 2017; Chun Tie et al., 2019).

Conceptual framework

To guide the investigation, we applied the conceptual framework by

Table 1
Details of interview partners ($N = 25$).

Nr.	Organisation	Date of interview	Field (F) /Tel (T)/ Online (O)
Public Forest Managers (FM; $N = 15$)			
FM01	Municipality of Renkum	January 2021	O
FM02	Public-private estate	January 2021	O
FM03	Natuurmonumenten*	January 2021	O
FM04	Staatsbosbeheer**	February 2021	O
FM05	Staatsbosbeheer	February 2021	O
FM06	Staatsbosbeheer	February 2021	O
FM07	Staatsbosbeheer	February 2021	O
FM08	Natuurmonumenten	Feb-March 21	O
FM09	Forest Group Zuid Nederland	Feb-March 21	O
FM10	Staatsbosbeheer	Feb-March 21	O
FM11	Natuurmonumenten	Feb-March 21	O
FM12	Staatsbosbeheer	Feb-March 21	O
FM13	Staatsbosbeheer	March 2021	O
FM14	Municipality of Heerde	May 2021	F
FM15	Staatsbosbeheer	April 2021	F
Private Forest Owners/Managers (FP; $N = 10$)			
FP01	Private estate	February 2020	F
FP02	Private retreat centre	February 2020	T
FP03	Retreat centre & small living community	February 2020	T
FP04	Private nature & retreat estate	February 2020	T
FP05	Natural Burial Estate / private	February 2020	F
FP06	Natural Burial Estate / private	February 2020	F
FP07	Natural Burial Estate / private assoc.	February 2020	T
FP08	Private estate	January 2020	F
FP09	Forester & Nature coach	Feb-March 2021	O
FP10	Forester & Private training school	January 2021	F

* Natuurmonumenten = Largest Dutch nature conservation organisation.

** Staatsbosbeheer = State forest service.

De Pater et al. (2021) in which spiritual values are expressed in nine or ten dimensions, depending on the research. As explained above, phenomena may express one, more or all dimensions with different levels of intensity. For this study we identified the dimensions discussed in Section 2.2, which here serve as analytical units for investigating forest spirituality. The dimensions were set off against other units of research, namely, different forms of forest management practices, and attributes specifying these practices and spiritual dimensions. These units were generated inductively during the data collection and analysis.

Methods

Data collection

Primary data were collected by interviewing forest managers selected by purposive sampling and snowball sampling. These sampling methods were preferred above random or systematic selection as the research questions specifically ask for types and role of spirituality in relation to forest management. We did not sample for studying the spreading of forest spirituality over the total population of foresters or for proof of a rising trend across The Netherlands. The most important criterion for selection was the participants' willingness to talk in depth about the subject and share as much information as possible. Forest managers were approached by means of personal networks, word-of-mouth communication, and websites. A total of 25 foresters were selected, (10 female, 14 male, one unspecified), all in the in the middle

or later phase of their career. Out of this group, 15 foresters –here labeled ‘public foresters’– were formally employed by large nature management organizations; the other ten –here labeled ‘private foresters’– were private estate owners (5), managers of natural burial sites (3) or former forester managers who had switched to spiritual coaching (2). All were competent adults who gave prior informed consent for the interview and use of the results. An overview of the interviewees is presented in Table 1. As the number of Dutch forest managers is relatively small² and as they are easily identified by their location, gender, numbers and locations are unrelated in this publication to ensure anonymity. However, the geographical distribution coincides with the country's main forest areas, which are unevenly spread over the country, as shown in Fig. 1.

The interviews were conducted by five interviewers who had received training and followed semi-structured interview protocols (Appendix A). Partly due to COVID restrictions, most interviews were held by telephone or online; six interviews took place in the field. The questions centred around participants' understanding of spiritual values, the importance of spiritual values for the foresters themselves and in their relationship with other parties (e.g. visitors, clients), and how spiritual values affected their day-to-day work. All interviews lasted approx. one hour and were transcribed verbatim, except for three interviews which were summarized in annotations.

Additional data were collected during a 45 min workshop Spiritual Values in Forest Management with approximately 60 foresters (public and private) which took place at the National Area Managers' Day on 23 September 2022. We asked questions using Mentimeter (<https://www.mentimeter.com/>) before and after a presentation of the preliminary results (see Appendix C for workshop questions and answers). In order to contact more foresters, we distributed flyers inviting foresters to complete a short online questionnaire which including the workshop questions and yielded 11 responses (Appendix D). As foresters also mentioned an increase in spiritual activities, we used the workshop as an opportunity to probe foresters' learning needs in this respect. This part of the investigation added numerical weight to the foresters' group, but given the limited time and methods used, this part of the research investigation served as a ‘rapid appraisal’ alongside the main body of this research.

Data analysis

All interview transcripts were coded and analyzed using Atlas.ti 9. Texts were searched for themes and quotations that were coded in three rounds of, respectively, initial, focused and integrative coding (Chun Tie et al., 2019).

We coded deductively first by searching for references to the abovementioned dimensions of spirituality. An initial search coding list was used to trace the spiritual dimensions. We analyzed the relative frequencies in which the ten dimensions of spirituality ('D codes') occurred in each interview, and then averaged these frequencies to see how often each dimension appeared in the whole group of foresters as well as in the groups of public and private foresters, respectively. The results are discussed in Section 4.1.

Secondly, focused coding was applied by searching all texts inductively for additional codes mentioned in relation to spiritual dimensions and forest management practices. In this round, a body of codes was built in an iterative process of searching, comparing, adjustment, and commenting throughout. The following categories of codes were generated this way: a) attributes or characteristics specifying the spiritual dimensions coded as: a) Attributes related to management ('AM'); b) other attributes ('A'); and c) management activities ('M' codes). A full list of codes is presented in Appendix A. We then analyzed how these code sets were represented in the various spiritual dimensions ('D'

² The total number of employed and independent forest workers at all levels (from vocational to academic) is appr. 4000 (Van Hulle & Grotenhuis 2020).



Fig. 1. Locations of research participants in the Netherlands. Black * = public forest managers (FM); Blue * = private forest owners/managers (FP). Green = forest area.

codes), by calculating the respective co-occurrences in Atlas.ti and interpreting related quotations. In order to obtain an indication of the weight given to the various spiritual dimensions by the interviewees, the percentages of each dimension per interviewee were calculated, followed by the average of these percentages per dimension. We thus obtained: a) an overview of the characteristics of each dimension in relation to the various agents and activities, and b) the qualitative significance of each dimension for forest management practices.

In the third, integrative coding round, we re-examined the results of the previous round for public foresters (FM) and private foresters (FP). We elicited the approximately 30 %-50 % strongest co-occurrences of the codes for spiritual dimensions ('D') with, respectively, attributes ('AM' and 'A') and management practices (M). We then created a network in Atlas.ti in which these co-occurrences were represented as relationships by connecting lines between the various elements. The following relationships were distinguished: FM strong; FP strong; FM

weak; FP weak; FM+FP strong; and FM+FP weak. We then analysed the numbers and strengths of the relationships for each spiritual dimension and found that two dimensions emerged: the Practical-Ritual (D5) and the Philosophical-Ethical (D7) dimension. These dimensions each appeared to be connected with a distinct set of attributes and management practices, which were finally described as 'themes'.

The results of the workshop and questionnaire at the National Area Managers' Day were also coded in Atlas.ti in one inductive round. The answers were analysed to 1) refine the results of the interview analyses; and 2) elicit foresters' needs and suggestions for learning in dealing with forest spirituality.

Reliability check

In addition to frequently comparing and commenting on codes during the process, an independent researcher carried out a reliability check on the coding (cf. Kumar, 2014:215–16). She selected quotations and

re-coded text fragments from three pages in ten interviews each. Both pages and interviews were randomly selected. The differences in interpretation were discussed and adapted where necessary. An estimated 80 % concurrence with the original codes was observed. All data are stored in Mendeley Data (De Pater, 2024).

Results

This section presents the results in three steps. First, we present how the ten spiritual dimensions are identified across the interviews (Section 4.1). Secondly, we report how the interviewees relate these spiritual dimensions to their management practices (Section 4.2). We discuss the results of the workshop and questionnaire in Section 4.3.

Presence of spiritual dimensions in the interviews

This section reports the identification of a total of 835 codes across all spiritual dimensions for both groups of interviewees as visualized in Fig. 2. Overall, the most frequent spiritual dimension is the *Practical-Ritual* dimension (D5) followed by the *Philosophical-Ethical* dimension (D7) and the *Experiential-Restorative* dimension (D3). Other dimensions show lower frequencies. Remarkably, the *Philosophical-Ethical* dimension (D7) is by far the highest among the public foresters and very low among the private foresters. The *Material-Spiritual* dimension (D9) and the *Mythical-Narrative* dimension (D6) are markedly higher among the public foresters than among the private foresters. Other dimensions score low in both groups.

Spiritual dimensions in relation to forest management practices

We demonstrate how spiritual dimensions are associated with the various management practices by the two groups of forest managers. We also discuss the interviewees' perspectives and views on spirituality in relation to these practices. Table 2 presents the relationship between the spiritual dimensions and some 25 forest management interventions mentioned by interview partners. We discuss these measures for each dimension in the sections below. Network analysis reveals that some spiritual dimensions are relatively strongly related to each other as well as to measures and attributes. This resulted in four different 'themes' in

which forest spirituality is expressed. Each theme is constituted by various spiritual dimensions. Two themes stood out and are described below. Theme 1 (Section 4.2.2) is concentrated around the *Practical-Ritual* dimension. It addresses ritual practices for spiritual enrichment and restoration in the forest. Private foresters tend to direct their management to these goals, and do so by preserving tranquillity, old growth and ancient objects on their estates; public foresters must accommodate diverging interests and reconcile spiritual, social and ecological objectives in their management. They apply zoning, communication and, where necessary, enforcement to ensure tranquillity and protection of vulnerable areas, and they are currently experimenting with permits and access fees for professionally organized spiritual practices. Theme 2 (Section 4.2.3.) is concentrated around the *Philosophical-Ethical* dimension. It concerns the ontological and relational underpinnings of forest management, which play out in: a) current debates about tree felling, in which public foresters must reconcile ecological considerations with their own respect for trees as well as different ontologies among the public; and b) educational programmes valued by both public and private foresters to engender deeper-level connectedness with nature, especially among children.

In addition, we found two less pronounced themes (see Appendix E). Theme 3 is centred around the *Mythical-Narrative* dimension. It concerns forest spirituality in narratives and the past, expressed in the mystery of local legends and historical monuments, deployed to raise the public's interest in forests. Theme 4 combines the *Experiential-Life force*, *Experiential-Unspecified*, and *Experiential-Aesthetical* dimensions. It addresses the ineffable aspects of spirituality, which emerge in references to further unspecified spiritual experiences, to 'life force' energy guiding intuitive management practices in some private and public forests, and, rarely, to numinous aesthetical experiences.

Theme 1: ritual practices for spiritual enrichment and restoration in the forest

This theme features in the *Practical-Ritual* dimension, with strong links to the *Material-Spiritual*, *Social-Institutional* dimensions, and in the *Experiential-Restorative* dimension. The network of relationships underlying this theme is visualised in Fig. 3.

The *Practical-Ritual* dimension (D5) is the most frequently expressed of all dimensions. About half of the interviewees observe an

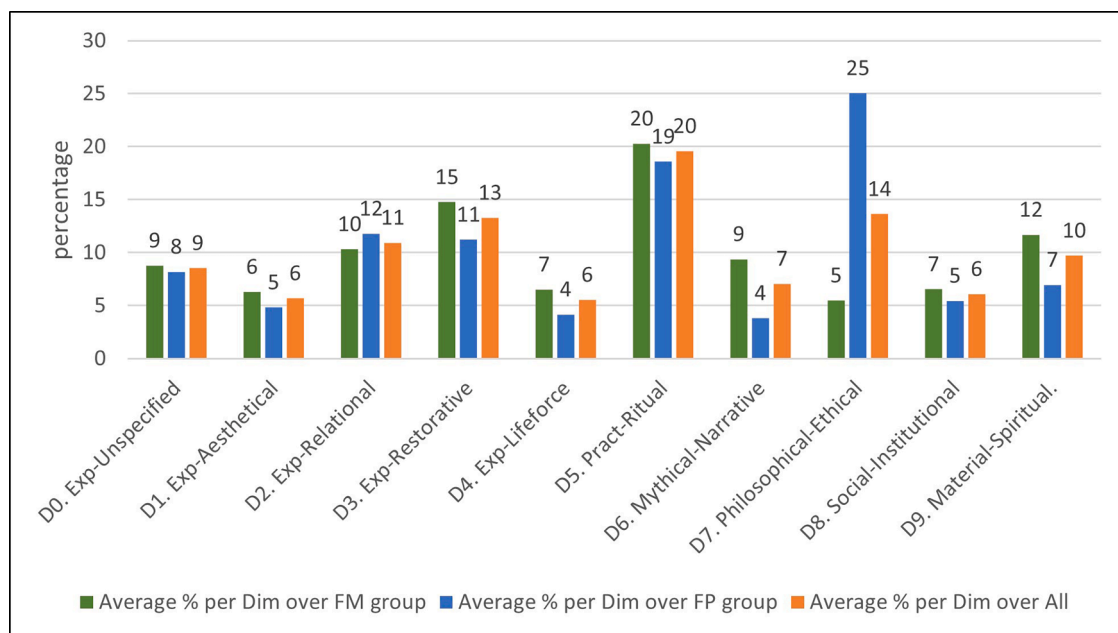


Fig. 2. Distribution of codes over spiritual dimensions (Dim) for public forest managers (FM) and private forest owners/managers (FP), respectively (average percentage of dimension per person per group, see 3.3.2).

Table 2

Forest management measures related to dimensions of spirituality, for all foresters together.

	• D0. Exp- Un- spe- ci- fied	• D1. Exp- Aes- theti- cal	• D2. Exp- Rela- tio- nal	• D3. Exp- Re- stora- tive	• D4. Exp- Life force	• D5. Prac- tical- Ritu- al	• D6. Myth- i-cal- Nar- ra- tive	• D7. Phi- loso- phi- cal- Ethi- cal	• D8. Soci- al- Insti- tutio- nal	• D9. Mate- rial- Spiri- tual	Total	
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	%
M. Problems	7	2	5	8	3	21	4	11	24	8	93	19,5
M. Enforcement	4	0	2	2	2	19	0	0	25	3	57	11,9
M. Requests from public	0	1	0	3	3	14	2	5	13	6	47	9,8
M. CommEducKnowl	2	0	14	0	1	1	11	4	1	4	38	7,9
M. Protection	2	3	3	0	0	6	1	3	9	6	33	6,9
M. Description-use	3	1	1	7	1	15	1	0	1	2	32	6,7
M. Nature Excursions	7	0	2	5	1	0	7	0	1	0	23	4,8
M. Nature tourism	4	0	0	10	0	4	3	0	2	0	23	4,8
M. Objective & Strategy	2	2	1	2	0	4	1	4	3	1	20	4,2
M. Bench	0	3	0	4	0	7	1	0	1	4	20	4,2
M. Tree felling	1	3	5	0	2	0	1	3	0	2	17	3,6
M. Restoration & Maintenance	0	3	2	0	0	0	4	3	1	3	16	3,3
M. Zoning	0	3	0	8	0	1	0	1	0	0	13	2,7
M. Thinning/Selective cutting	1	2	1	1	0	0	0	0	0	3	8	1,7
M. Tree planting	2	1	0	0	0	2	1	0	1	0	7	1,5
M. Plans	0	0	1	0	1	0	0	1	1	2	6	1,3
M. Traditional use/knowledge	1	0	0	0	0	0	0	2	0	3	6	1,3
M. Wildlife management	0	0	0	1	1	0	0	3	1	0	6	1,3
M. Nature Events	0	0	0	1	0	2	1	0	2	0	6	1,3
M. Zichtlijn	0	1	0	0	0	1	0	0	0	0	2	0,4
M. Climate measures	0	0	0	0	0	0	0	1	0	0	1	0,2
M. Description-what is	0	0	0	0	0	0	1	0	0	0	1	0,2
M. Research	0	0	0	0	0	0	0	1	0	0	1	0,2
M. Clear cut	1	0	0	0	0	0	0	0	0	0	1	0,2
M. Handwork	0	0	0	0	0	0	0	0	0	1	1	0,2
Total (#)	37	25	37	52	15	97	39	42	86	48	478	100,0
Total (%)	7,7	5,2	7,7	10,9	3,1	20,3	8,2	8,8	18,0	10,0	100,0	

increase of spiritual practices in their forests. Private forest managers are frequently engaged in facilitating ritual practices, mostly by allowing ashes of the deceased to be scattered in special places, or creating a quiet environment for meditative contemplation. Some owners had established ceremonial places; in one natural burial area, benches were carefully placed in 'meditative' places with a view of the landscape where people could find inner peace. Public forest managers also encounter people engaged in silent walking, meditation, or all kinds of ceremonies.. Foresters find dispersed ashes, flowers, trinkets or even candles that represent traces of rituals in their area; remnants are removed if they present any risks: "If it's little tiny things that will deteriorate by themselves, we leave them. The bigger things, we remove. And candles, for sure"(1:146). They often said that they suspect that spiritual

activities occur more often than they are aware of. As one forester recounts: "We have a lonely oak [...] in the forest, a very old oak standing in a special place. One night I [came across] a witches' ritual there. They were dancing around that tree. I did not see a problem, although I would not do it myself. It is a kind of ritual people look for [...]. Actually, they're not allowed to be in the forest at night" (7:43). Sometimes foresters receive requests for 'spiritual' use of an area: meditation, yoga, ceremonies based on Pagan or Celtic spiritual traditions, therapeutical coaching in nature areas, dispersing ashes or establishing remembrance objects. Foresters will tolerate such practices if the practitioners do not conduct their practices away from paths and do not enter vulnerable areas, light fires, make noise or otherwise create disturbance. However, those conditions are not always met: "Last year we met a group of people who were having a

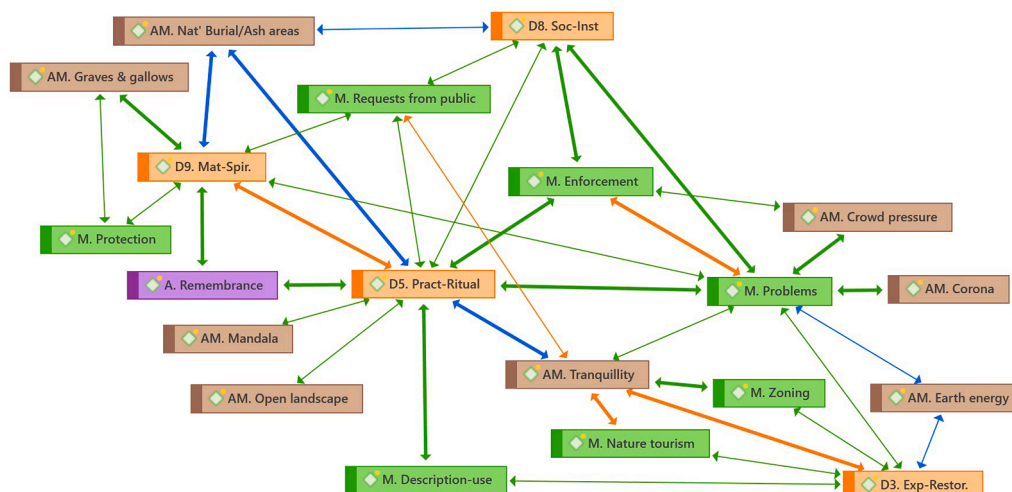


Fig. 3. Network constituting Theme 1, Ritual practices in the forest for spiritual enrichment and restoration.

spiritual experience, they walked everywhere. Straight through the fields and the heathlands. Because there is a very special place in the woods, and there they have to be [...] Those are things we don't like because we have a lot of visitors. And if we allow everybody to [leave the trails], it's not good for nature." In those cases, forest managers send people away, or fine them for trespassing, depending on the situation. They must weigh up the spiritual seekers' interests against ecological risk and their mandate to apply equal rules to all.

The Material-Spiritual dimension (D9) is strongly related to the *Practical-Ritual* dimension. It is expressed in a variety of material features mentioned by foresters of both groups in relation to forest spirituality, also in tandem with the *Practical-Ritual* dimension. Private forest managers mainly refer to this dimension in connection with burials and ash dispersal. Public foresters also mention objects in connection to remembrance rituals involving artwork, flowers, memorial tree planting or other material expressions. They also mention stone circles, mandalas or a labyrinth made in the area. Some areas contain ancient dolmens, burial mounds, gallows hills or other archaeological relicts which need to be maintained for cultural-historical reasons. Such archaeological monuments do not have an a priori 'spiritual' meaning, but for some people, they do: "For example at burial mounds; people sometimes want to do something there. Last November we were mowing burial mounds. And there was a lady who went there with a special flute. She sat down to make music on that burial mound. Her story was that she tried to calm the spirits that way" (7:41). Protection of these monuments is sometimes an issue, for instance in this case: "I know that people go [to the dolmen] on 21st June to celebrate the summer solstice. Once there was an accident, because they made a fire right against the dolmen. So, one of the stones broke because of the heat. And now, every year we go there in the evening to see if everything is all right and they don't make a mess of it. They are students [...] and they drink a lot of booze" (11:33).

The Social-Institutional dimension (D8) is also related to the *Practical-Ritual* dimension. Managers of public forests observe an increase in organised spiritual activities, often on a professional basis: "When two people practise yoga in a place where they do no harm, that's no problem for us, as it is not commercial. But we will approach a group of 20 persons sitting together in the grass. We don't send them away immediately, but we give them our card, record their contact details, and tell them we'd like to contact them about organizing this" (9:8). Foresters find themselves engaged in dialogue about behaviour, conditions and rules about spiritual practices: "We like that people ask permission and then we explain to them: 'Do it near a path. Don't let people walk too far into the forest' and then that's all fine" (4:203). Many foresters would like to issue permits, raise access fees and enter into contracts as a good means to maintain control and cover some of the costs: "All that nature is not entirely free of charge

[...] You earn money with it, but well, we also have to maintain the area. So, we sometimes charge a fee, but it is still very difficult; arranging those permits is in its infancy, because people don't yet take it for granted that they should pay for nature" (9:6). So, there is a variety of ways in which the *Social-Institutional* dimension is expressed in forest management, from 'due diligence' to active encouragement.

The Experiential-Restorative dimension (D3) is the third important dimension found in the interviews. Both groups of foresters frequently refer to health and other benefits from nature to the human spirit, for themselves, for visitors or for people in general. Tranquillity is by far the most cherished attribute mentioned: "The openness, the roughness of nature, the silence. Those are key values for people to visit this area. And if you translate them to what spirituality means, then it's something that people, how do you say that? It is one of the most important things for people to come and visit this place" (13:5).

Some private owners open their estate for the specific purpose of mental and spiritual restoration: "Those hectares are open for coaches who want to be in the silence of nature with groups. The people who register for them are in great need of rest and that also means that they have to cleanse their minds as well as their bodies" (27:16). In addition to tranquillity, 'Earth energy' is sometimes mentioned as an important ingredient for restoration: "Some people sink down in a kind of wellness bath, in that silence-energy field." (27:41).

Another private owner explains how old growth on their estate stimulates spiritual healing: "Nature in a very old area that has been there for a long time provides a strong basis for people who walk there or come into contact with it. Of course, it is quite different from a young plantation and you feel the difference. You see damage to trees, for instance, and you can use that kind of nature very well as a mirror for your own development and your own security in the various phases in your life. Then people can regain power from nature from that basis and they can return to the world in a friendly and positive way, we hope" (28:5). In natural burial areas, nature is observed to bring comfort: "For many visitors, it is important to seek comfort from nature and find rest. Typically, during funeral ceremonies [in our area] the atmosphere is much less formal, and people are more themselves. Participants make speeches spontaneously, for instance. It seems nature has a soothing effect on people" (31:7). Benches are often specifically placed as restful places in public as well as private forests: "All around [our area], we have these beautiful wooden benches that people use as a kind of remembrance place or something" (6:15).

In public forests that are commonly visited by diverse groups of users, forest managers often face the challenge of ensuring sufficient tranquillity for the benefit of wildlife as well as rest-seekers. Especially mountain bikers were found to clash with silence seekers. This was aggravated when the forests became crowded during the COVID-19

pandemic. During that and other times, zoning was the most important measure separating the various recreational uses of the forest: “One tries to apply zoning to the area. So, you look for where to have what. In any case, to try and prevent people meeting each other as much as possible [...], so that everyone is served as they wish” (3:23). Another measure is reducing the network of walking routes: “We shut the paths down and get people to walk around it. That way, we create a more robust piece of forest where nature can retreat and does not get disturbed by visitors. So, it’s mostly for the forest animals, but it also brings peace and quiet. You won’t see any people or hear any noise” (4:181). With these and other measures intensive recreation and sports are separated from rest-seekers who often walk longer distances.

Theme 2: Ontological and relational underpinnings of forest management

Theme 2 addresses the deeper motives for management practices that interviewees implicitly or explicitly associate with spirituality. This theme is informed by the *Philosophical-Ethical* and *Experiential-Relational* dimensions, which appear in foresters’ reflections on tree felling and on communication with people. The network of related attributes and measures underlying this theme is visualised in Fig. 4.

The Philosophical-Ethical dimension (D7) is the most frequently mentioned in interviews with the private forest managers, but appears little among the public forest managers. This dimension is present in reflections on various subjects. One private owner reflects on the objectives and strategies of their management as follows: “In the practical management of the natural burial site, spirituality is not really actively thought of, but it is somewhere in its foundation” (31:15). Another manager of a public forest reflects on what ownership means for communication with residents: “You know, we have to share our vision, our policy, with people who live there. Because we are the rightful owner. But they are, I think, the spiritual owner, hey? When you live there, it doesn’t matter that the signboard says, it belongs to [this owner]. It’s your birthplace. So, it’s rather strange to say: ‘this is our nature reserve’” (15:22). One private forester is more articulate about the spiritual underpinning of their management: “Actually, it doesn’t really matter that you are the land owner, but what matters is that you manage it with heart and soul, whether or not it is your property. The only advantage of owning the land in these times is that you are not overruled by other people’s concepts and conditionings that are harmful to the area” (27:44).

Foresters specifically respect trees: “They [the trees] have been there for 80 or 100 or 150 years and they’ve seen all these people coming by, all these squirrels, and they’re way older and wiser than we are. So, they can teach us a lot [...]. They’ve been on earth way longer than we have, so you can learn so much from the trees” (5:60). Regarding trees with respect can cause dilemmas when it comes to tree felling: “I had a discussion with one of my rangers who was marking the trees in a block for thinning. I told him: ‘I don’t like it when you mark those three Douglas firs in the middle of the block,

because they’re very beautiful big trees.’ But he marked them, saying: ‘They’re just nasty big trees, nothing grows underneath or nearby.’ They were massive trees over 100 years old. For me, they had a meaning, because they were old. However, they were also in the middle of a block of young forest, so he felled them. Then they were lying by the roadside, but no one wanted to buy them ‘because they had too many branches [...]. Later on, he told me that he felt sorry that he had felled them.” (1:138). Another forester recognized that the felling of a monumental tree is a definite historical loss, but that it at least obliges us to create renewal: *You should not destroy a piece of history and do nothing with it in return. We can never restore that old tree, but we can start something new again in the same capacity*” (2:37). Some foresters find it challenging to communicate these complex feelings with the public, too: “If I see that all these trees have been cut down, even for very good reasons, it hurts me personally. But in my profession, I know that sometimes it just needs to be done. So, when I’m having a conversation with people who don’t agree with our plans, I try to communicate that I also find it difficult, but it’s for the greater good; it’s not about this individual tree, but it’s a system recovery. And sometimes you get a little more understanding then. But yeah, it still hurts some people. And you cannot really take that pain away” (13:34). Nevertheless, different views on nature will remain: “Our core values match, because we both want to protect nature. But the vision on how to do it is different. We think we need to cut trees to protect the peatlands, and other people think: ‘stay out of nature and nature can manage itself’” (13:31). However, other foresters reported they had learnt to cope with growing public resistance against tree felling by careful and timely communication, and, if possible, field excursions to demonstrate the reasons for felling.

The Experiential-Relational dimension (D2) is referred to by foresters of both groups. Some declare that they mostly apply an ‘ecological lens’ when dealing with the forest. Others observe that people act from different perspectives on the world: either seeing ‘nature’ as something separate, or seeing people and nature as connected. Connectedness is often related to seeing trees and nature as people: “So, the tree is a life form as well. If you say hello to it, or connect with it, you can ask if it wants connection or not” (5:11). The dimension also comes back when foresters talk about their feelings about tree felling: “When we had to cut trees – don’t tell my colleagues – but I did talk with the trees [and said] that some of them would be taken out. And become firewood for other people so they could warm up. So I do connect with the trees or the life forms to let them know what’s gonna happen. And sometimes it’s difficult ‘cause we planted them and we planted them very close to each other ‘cause this is how we manage forests.” (5:53).

Some foresters struggle to convey their deep passion for nature to the public: “I can’t imagine anyone who doesn’t like to be in nature [...]. But still, it’s like a deeper layer or something. And the struggle I find myself in, also in my work, is: how do you really touch people in their core [so that they understand] that nature is important? You can have all these stories about the

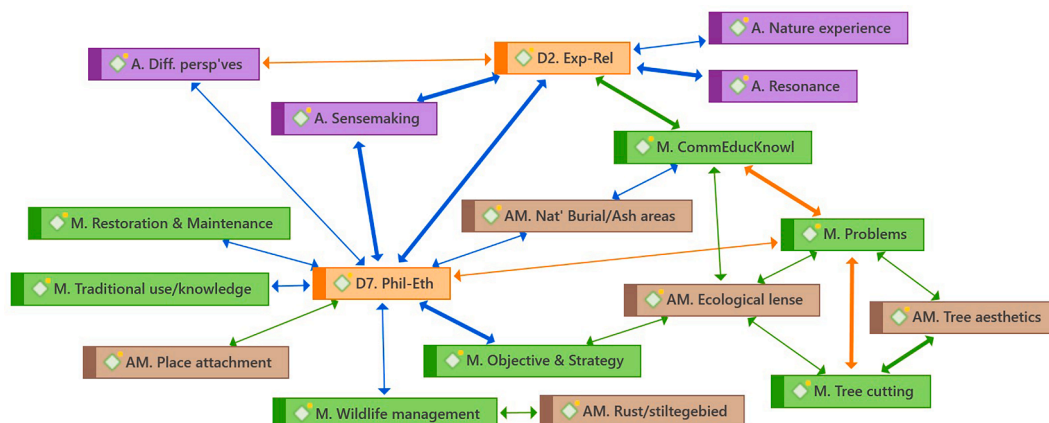


Fig. 4. Network constituting Theme 2, Ontological and relational underpinnings of forest management.

special birds and the special insects that are here, [that are] important to peatlands. But how to really, really touch people?" (13:54). Many public foresters are engaged in educational programmes and consider it especially important for children to connect with nature 'at a deeper level'. As one forester explicitly put it: "That is about just letting children wonder and let them connect with nature and not so much that they can list ten species when they come back, but more that they experienced that they really make that connection. And I think you can actually count that as spirituality. So it is still energy what you feel. And yes, we do that sort of thing" (17:20). Several foresters mention the 'NatuurWijs' ('Nature Wise') project as a successful way to connect children with nature. This project was pioneered by Princess Irene, a member of the Dutch royal family and renowned for her nature connection work through the 'Nature College' Foundation which she initiated and chairs (Natuurcollege, 2022).

Results from the workshop and the questionnaire

The interactive workshop *Spiritual Values in Forest Management* (see 3.3.1) attracted 60 participants. They answered six questions and reported a large variety of forest spirituality in their work. The *Philosophical-Ethical* dimension scored highest of all, followed by the *Practical-Ritual* dimension. The *Mythical-Narrative* and *Experiential-Relational* dimensions were also represented. A third of the participants said they could handle issues involving spirituality, while about half of the group expressed the wish to learn more. Most of them said that they would appreciate the exchange of knowledge, experiences, and practical advice among colleagues and professionals in workshops and field visits. A few participants and about half of the questionnaire respondents reported that they did not have any learning needs. Some of them, e.g. one manager of a memorial forest, said so because they were already highly knowledgeable of forest spirituality. Appendix C presents a full overview of workshop responses, and Appendix D reports all answers to the questionnaire. The results were largely in line with the findings of the interviews and identified a need for the improvement of foresters' skills in integrating spiritual values in forest management.

Discussion

The aim of this research was to elicit how spiritual values are articulated in forest management practices in the Netherlands. In this section we discuss the overall findings in relation to the research questions and existing literature (Sections 5.1-5.3), and the merits and limitations of the conceptual framework, methodology and methods applied in this research (Section 5.4).

Types of forest spirituality in management practices

As for Research Question 1, we saw that there are many types (dimensions) of forest spirituality in forest management practices, and some appear more often than others. We also saw little difference between public and private foresters. The exception is the *Philosophical-Ethical* dimension, which was the most frequently mentioned by private foresters but far, but it was rarely by public foresters. This may be explained by the difference in the foresters' position. Private owners are free to apply their own views and motives to forest management, while public forest managers are bound by the views and policies of their organization. The high presence of the *Practical-Ritual* dimension in both groups can be ascribed to the increasing popularity of spiritual practices in nature, which private owners encourage on their own estates while public foresters encounter such practices by others within a more complex governance setting. The *Experiential-Restorative* and *Experiential-Relational* dimensions come third and fourth in both groups and concur with society's increased awareness of nature's significance for health and mental restoration (Barragan-Jason et al., 2021). The other dimensions are poorly represented, including, surprisingly, the *Experiential-Aesthetic* dimension. Forests are among the most aesthetically

inspiring forms of nature, and give rise to sublime experiences that can be called 'spiritual' (Schama, 1995; Roncken, 2018) and if forest planning and research ever touch upon spirituality at all, it is in connection with experience, aesthetic or other (De Pater et al., 2023). However, most literature focuses on forest visitors or users while our study addresses the managers who are apparently more concerned with the practical dimensions of spirituality.

How forest spirituality influences forest management practices

As for Research Question 2, we found four themes in which forest spirituality influenced forest management practices. Firstly, ritual practices in the forest for the purposes of spiritual enrichment and restoration (Theme 1) are forest managers' most important concern in this respect. We see a contrast here between private foresters who are free to explicitly direct their management to spiritual goals, and public foresters, who have to accommodate a public with diverging interests and reconcile spiritual, social, ecological and economical objectives in their management. Large area management organizations (see, e.g., Natuurmonumenten, n.d.) are now imposing stricter access rules for larger groups and professional activities. Foresters are also calling for stricter enforcement of rules. In this way, forest spirituality may become entangled in the increasing tension between, on the one hand, the conflicting goals of open-access and protective enforcement on the other (Thomas and Reed, 2019; Tyrväinen et al., 2023).

Secondly, ontological and relational considerations underpin two areas of forest management (Theme 2). Diverging views on trees and nature inform current debates about tree felling in which public foresters have to reconcile their respect for trees with ecological considerations and emotional reactions from the public. This concurs with literature on forest conflicts of which the causes are ascribed to, among others, differences in worldviews, social representation and emotions (Satterfield, 2002; Buijs et al., 2011). In a sense, our research is also a response to the plea by Buijs and Lawrence (2013:110) for an "emotional turn [which] is not contradictory to discursive accounts of forestry, but an essential part of it. A further challenge exists in understanding and incorporating the deepest of emotions related to identity, survival, and spirituality". Foresters in our study indeed indicated that they learnt to reduce tensions around tree felling by open communication and dialogue. However, these processes are often complicated and further disentangling the 'spiritual' strain from them might encourage better understanding.

The same ontological and relational considerations also affect the deeper-level connection with nature which both public and private foresters value highly. We see here a difference in the goals and orientation between the two groups of foresters in respect of connecting people and nature. The public foresters in our interviews operate under policies and plans that have for a long time promoted nature experience to raise the broad public's interest in and support for nature (e.g., Staatsbosbeheer, 2015b, 2020). Some interviewees working in communication and education programmes encourage a deeper nature *connectedness* among their audience, especially children, to engender health and nature-inclusive behaviour. However, this arises from their personal commitment and can only go as far as the audience is receptive – a factor they cannot control much. Private foresters, in contrast, are free to select their audience and many open their estates to small groups or individuals seeking *connectedness* with nature for self-realization or healing, alone or accompanied by a coach. We agree with Zylstra et al., (2014) that nature *experience* is only a part of the process to achieve nature *connectedness* as a "...sustained awareness of the interrelatedness between one's self and the rest of nature" (p. 119). The 'spiritual' is not always manifest in *experience* but may become more explicit in *connectedness*. We see here the outline of a process in which the 'spiritual' evolves as an important but hitherto little specified relational value in transforming forestry practices (Mattijssen et al., 2020; Barrows et al., 2022).

Thirdly, forest spirituality in narratives and in the past (Theme 3) is

expressed in the mystery of local legends and historical monuments, deployed to raise the public's interest in forests. This finding is associated with growing indications that spirituality (and religion, according to some authors) in processes of place attachment can be conducive to pro-conservation attitudes and behaviour (Mazumdar and Mazumdar, 2004; Raymond et al., 2017; Isyaku, 2021). What our research does not reveal, however, is that narratives and history can also be negatively attached to forests and engender primordial fear, e.g. through stories and traces of past violence, war actions, or graves in the forest (Schama, 1995; Van den Berg and Heijne, 2005). Perhaps forest managers' primarily positive disposition towards forests is an exhalation for this absence.

Fourthly, both public and private foresters made occasional references to ineffable aspects of forest spirituality (Theme 4). Some foresters made vague hints to 'spiritual' experiences which they were reluctant or unable to specify, a finding which concurs with the studies by Van Trigt et al. (2003) in the Netherlands and by Terhaar (2005) in the United States. The 'Experiential-Life force' dimension is occasionally expressed in references to vital energy by some public and private foresters. Some even actively work with these energies in practical interventions such as tree planting and felling. An exceptional example that made the national news is the Strubben-Kniphorst forest in province of Drenthe, where Staatsbosbeheer allowed a 'spiritual' working group to direct the selection of trees for cutting in a forest restoration operation (Van den Brand, 2011). These practices resonate with literature on Chinese fengshui forests (Coggins et al., 2019), 'Qi' or 'Prana' energy and its workings in medical and other applications (Belal et al., 2023), all documented under the umbrella of 'Earth mysteries' by (Ivakhiv, 2005).

Implications of a better understanding of forest spirituality in forest management practices

The interview results showed that foresters generally see a growing trend in spiritual practices in forests. In addition, the workshop and questionnaire, although limited in scope, showed that foresters want to learn and train their skills in these matters; they expressly asked for more opportunities to exchange experiences. The learning content should pertain to their management practices and interaction with spiritual practitioners. Details of their learning needs should be further articulated. Knowledge about the various types of forest-related and place-based spiritualities is an obvious subject. Foresters might benefit from knowledge exchange with colleagues or local coaches and therapists in their area, but they might also benefit from broader experts in 'ecospirituality' who might acquaint them with information and literature from elsewhere. Practical implications for management might be a more careful treatment of 'old growth forest' (mentioned in the interviews and workshop); more consideration for perceived 'Earth energies' of the landscape; enrichment of foresters' and citizens' knowledge of social-cultural history of the landscape; and better 'spiritually informed' management of special-use forests such as memorial forests or natural burial areas.

The results also confirm our earlier findings about the role of spiritual values in forest management plans from British Columbia and the Netherlands (De Pater et al., 2023). We conclude that spiritual values do not only feature in forest management plans, but also in on-the-ground practices. With respect to the themes emerging from the two studies, we see similarities as well as differences. Dutch forest management plans rarely address the two most important spiritual themes in Dutch forest management practices: 1) ritual practices in forest for spiritual enrichment and restoration, and 2) the ontological and relational underpinnings of forest management. However, ontologies and relational values do relate to spirituality in the British Columbian plans, namely in texts where selective felling is proposed as a form of 'wise use' of forests and a spiritually acceptable alternative for clearcut. The theme *Forest spirituality in narratives and the past* echoes the Dutch management plans

that mobilize history in storytelling and communication to connect visitors with land and nature. In this respect, the plans are duly implemented. The fourth theme, *Ineffable aspects of spirituality*, hardly appears in the management plans at all. Only some British Columbian plans mention First Nations' references to the 'power' of the land, which resonates with Dutch foresters in this study who occasionally mention the deployment of 'life force' in tree planting or landscaping. Finally, while the *Experiential-Aesthetic* dimensions of spirituality were by far the most prominent in all plans, these dimensions were much less significant in the practices of forest management. Overall, both studies indicate that forest spirituality is not only significant for nature experience, but also – and perhaps more so – for ritual practices, connectedness, health restoration and the 'wise use' of forests.

Reflection on the conceptual and methodological approach

In this section, we discuss various considerations about the conceptual approach, data selection, analysis, and validity. The conceptual framework (De Pater et al., 2021) proved to be adequate in order to analyse spiritual values in forest management. It broadly enabled the categorization of spiritual values in relation to forest management. However, the spiritual dimensions used in the conceptual framework appeared to be too broad as categories for the purposes of explaining spiritual values and their context in detail. The addition of attribute categories to the analysis solved this problem and yielded satisfactory results.

As for data collection, the selection of interview participants by purposive sampling may be criticized for the risk of self-reporting biases in the sample. This bias was diminished by the fact that foresters were not recruited on their specific interest in spirituality, but on their willingness to give an interview on the subject. As mentioned in 3.3.1, the population of Dutch foresters is small and they are often asked to participate in research interviews. We were therefore limited to those foresters who had no objection to discuss 'spirituality', a term that has long deterred professionals and others to participate (Van Trigt et al., 2003; De Pater et al., 2008, 2023). The sample also contained foresters who declared to be 'not spiritual' or even skeptical towards spirituality. In addition, although the room to spread the sample over the country was limited, we did cover most of the forested parts of The Netherlands (see Fig. 1). Random or systematic sampling would likely have resulted in more effort to recruit foresters and filter out those prepared to be interviewed, with the same sample as a result. Additionally, another sampling bias might have occurred as most of the managers were sampled during the COVID-19 emergency. During this period, foresters might have been more aware of intangible values of nature and inclined to consider them within their forest management routines. To trace this bias, we applied an 'attribute' code ('AM Corona') in our analysis to identify COVID-related issues and possibly associated biases towards spiritual dimensions. Although COVID was found to be a great problem for foresters, especially in regulating visitor groups (see 4.2.1, last paragraph), there was no significant relation between COVID and forest spirituality, as Fig. 3 shows. Lastly, a bias might have occurred in the workshop results, as former interviewees might have attended the workshop. This could not be verified in the open-access setting of the event. However, the risk of bias was small, as there were far more attendants (60) than interviewees (25), some of whom had meanwhile retired, and the workshop questions were different from the interviews.

In addition, we found that neither of the two groups of public and private foresters were entirely homogenous. Some public foresters had great 'spiritual' interest while some private foresters (e.g. managers of natural burial grounds) were less explicitly spiritually orientated than others. In general, however, both groups were adequately represented and distinguishable.

With respect to data analysis, we recognize that holding and interpreting interviews is a subjective matter. This requires reflection on our own position as Dutch researchers with work careers in the Netherlands

and abroad. We tried to refrain from undue judgements and checked our interpretations repeatedly against coding done previously by the original data analysts and against our own work, and a reliability check was performed as well. Nevertheless, we cannot rule out that some degree of subjectivity has remained.

As for validity, this is largely limited to the research area due to the qualitative nature of the research. Nevertheless, we made every possible effort to ensure external validity (Kumar, 2014) by thoroughly documenting all parts of the research process.

Conclusion

This paper contributes to six main insights. Firstly, our findings confirm once more that the recognition of spiritual values of forests is not limited to Indigenous people or the Global South (Elands et al., 2019; Verschuuren et al., 2021; De Pater et al., 2023). Moreover, the increase of spiritual practices observed in Dutch forests is consistent with the rise of ‘nature-based spirituality’ among the public as described by Taylor (2010) and the appearance of ‘spiritual enlightenment’ as a category of forest cultural ecosystem services in the Europe-wide survey by Torralba et al. (2020).

Secondly, our findings indicate a strong interest in forest spirituality in the Netherlands. This is in line with the ‘forest re-spiritualization’ hypothesis proposed by Roux et al. (2022). Our study provides some empirical insights on the nature of forest spirituality and its relevance for forest management in support of this hypothesis. The analytical lenses of both studies differ in some respects, though. Roux et al. derive their approach from the ecosystem services paradigm which applies an ‘etic’ approach, looking at spiritual phenomena from a pre-defined framework. Our research is partly rooted in religious studies scholarship (De Pater et al., 2021) which deploys an ‘emic’ lens, i.e. it looks at spiritual phenomena from the point of view of the insider (Caillon et al., 2017). While the ecosystem services approach allows comparison over larger areas and times, its ‘etic’ approach is less suited to identifying the specific – albeit perhaps ‘hard-to-define’ – characteristics of spiritual phenomena what we have tried to do here.

Thirdly, we observe that the interest in forest spirituality in the Netherlands concurs not only with the renewal of ancient Western spiritualities (Hanegraaf, 1998; Taylor, 2010), but it is also entangled with ‘Eastern’ and Indigenous spiritualities. The increase of forest-based practices such as yoga, meditation and ‘forest bathing’ contribute to the theory of the ‘Easternization of the West’ by Campbell (2007), stating that Eastern spiritualities fill the spiritual vacuum left by modern secularization in the Global North. Indigenous spiritual practices such as shamanic initiations, sweat lodges, medicine circles, etc. are also observed in Dutch forests. In contrast with North America, where Native American spiritualities feature prominently in forest management literature (e.g., McCorquodale et al., 1997; Driver et al., 1999; Lewis and Sheppard, 2013), ‘Indigenous’ forest-based practices in the Netherlands appear to be too scarce and mixed with other spiritual practices to be able to single them out in this research.

Fourthly, our study also concurs with the upcoming research field of ‘ecospirituality’, which “suggests [...] there is a spiritual dimension to ecology and that spirituality is indissociable from ecological concerns” (Choné 2017:38). Theoretically, ecospirituality encompasses virtually all modern philosophical, anthropological and other thinking at the interface of ecology and spirituality, mostly in the Global North. However, its empirical focus is mainly on religious movements or environmental activism, leaving out the actors at the very nexus of that interface: those who manage forests and landscape in dialogue with the public. Precisely this gap is addressed here. Our findings confirm that ‘ecospiritual’ tendencies are increasing in various forms of forest management in the Netherlands, albeit not always without tension. More

research would help shed more light on ecospirituality in forests and inform professional education.

Fifthly, in view of the demand for forest spirituality, we foresee a new role for foresters alongside the roles of ‘host’ and ‘protector/enforcer’: the role of ‘provider’ or even ‘seller’ of ‘spiritual goods and services’, analogous to facilities for outdoor sports such as trail running and mountain biking. While the reduction of spiritual values to mere commodities is certainly not justified, we should not dismiss the economic and financial aspects of forest spirituality beforehand. After all, they are part of the *Material-Spiritual* dimension in our conceptual framework. It might therefore be worthwhile to explore the economics of forest spirituality further, if only to obtain insight into its importance.

Finally, our study contributes to the realization that mere experiences in nature are not enough in themselves to engender lasting health benefits and behavioural transformation, but that nature connectedness touching deeper levels is required for that (Ives et al., 2018). This implies that nature connectedness is not a one-time affair, but rather a ‘learning way’, much as is taught by spiritual traditions. Although even a brief spiritual experience in nature can be striking and life changing (Terhaar, 2005), change is only sustained when experiences are repeated (Wang et al., 2023). In other words, engaging in forest spirituality may develop into a personal and communal learning way much the same as the ‘spiritual way’ known in spiritual traditions worldwide (Bawden, 2010 [1997]; Waaijman, 2001; De Pater, 2015). These learning ways should be further explored.

CRedit authorship contribution statement

Catharina de Pater: Writing – review & editing, Writing – original draft, Visualization, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Bas Verschuuren:** Writing – review & editing, Visualization, Supervision, Resources, Project administration, Methodology, Conceptualization. **Sonja Greil:** Writing – review & editing, Visualization, Validation, Supervision, Resources, Project administration, Methodology. **Arjen Wals:** Writing – review & editing, Validation, Investigation, Data curation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Current data are partly confidential. Anonymised data are currently available on request and will be made available online in the course of 2024.

Acknowledgements

This article would not have materialized without the dedicated support from Dr. Birgit Elands, who passed away in February 2022. We are also grateful to Dr. Gerard Verschoor and Dr. Bas Pedroli who gave constructive comments on earlier drafts of this article. We thank Anne Voskuilen, Joanne den Toom, and Laureen Broekmaat, for collecting part of the data, and Aranka Röthengatter for planning and assisting in the Area Managers’ Day on 23 September 2022. Finally, all participants of interviews, workshops and questionnaire are thankfully acknowledged for their valuable contribution. This research was self-funded.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.tfp.2024.100522](https://doi.org/10.1016/j.tfp.2024.100522).

Appendix A. - Interview guide forest managers

Prior to the interviews, participants were informed about the content and gave free, prior, informed consent.

Introduction

Short introduction and outline to the research and mention that it is part of a bigger PhD research. Then start with the following questions:

- Could you briefly introduce yourself?
 - How long have you managed this forest management site?
 - How big is this management area?
 - Do you have a FMP for the area? (If yes → Would you be ok with sharing that with us?)

Main questions

- Why did you choose this profession?
- Do people come to your forest area for spiritual reasons? (Examples: shamanic circle, yoga, forest bathing..)

No:

- Have you had requests for spiritual activities in your area?
- What type of requests?
- Who were these people? (Could I get the contact?)
- What were your reasons to not facilitate these?
- Do you know about other FM sites where this is the case?

Yes:

- Could you give an example?
- Who are these people? (Could I get the contact?)
- Is this something you like?
- Does this affect your management in any way?
- Do you know about other FM sites where this is also the case?
- Questions about spiritual dimensions in forest management
 - Does aesthetics play a role in your management? (And why is that so?)
 - Are there particular areas where quietness and tranquillity are very important? (And why is that so?)
 - Are you aware of a site or tree in your management area that people (or yourself) feel particularly connected to? (or more generally ask about conflicts with cutting down trees)
 - Are you aware of any trees or parts of your landscape that other people (or yourself) feel have subtle, life/vital energies?
 - Are there any rituals being held in your management area?
 - Are there any stories or myths associated with your area?
 - Have there been initiatives for planting trees or conserving sacred sites?
 - Have you been interacting with any spiritual groups that wanted to come to your forest area?
 - Do people take things out of the forest for ritual purpose?
- Have you had a significant or powerful experience in the forest?
- Do you have a favourite site in your management area? Could you tell me more about that?

End of interview:

- Was there anything else you wanted to mention in the context of this research?
- Would you be open for further questions if I come up with any after our interview?
- Would you like to receive my final research?
- Would you be ok with sharing your FMP for the PhD research?
- Do you have any idea how the results could be best communicated professionally with Forest managers in the Netherlands?
- Do you know anyone else who could be interested in being interviewed about this topic?

If you have any questions or something else comes to your mind you can always reach out to me again.

Appendix B. Codes used in data analysis

Note: Specifications are available with the first author.

B.1. Dimensions of Spirituality ('D' codes)

D0. Experiential-Unspecified
 D1. Experiential-Aesthetical
 D2. Experiential-Relational
 D3. Experiential-Restorative
 D4. Experiential-Lifeforce
 D5. Practical-Ritual
 D6. Mythical-Narrative
 D7. Philosophical-Ethical
 D8. Social-Institutional
 D9. Material-Spiritual.

B.2. Mgt. Interventions ('M' codes)

M. Bench
 M. Clear cut
 M. Climate measures
 M. CommEducKnowl
 M. Description-use
 M. Description-what is
 M. Enforcement
 M. Handwork
 M. Nature Events
 M. Nature Excursions
 M. Nature tourism
 M. Objective & Strategy
 M. Plans
 M. Problems
 M. Protection
 M. Requests from public
 M. Research
 M. Restoration & Maintenance
 M. Sightline
 M. Thinning/Selective cutting
 M. Traditional use/knowledge
 M. Tree cutting
 M. Tree planting
 M. Wildlife management
 M. Zoning

B.3. Attributes related to forests and management ('AM' codes)

AM. (Health) benefits of nature
 AM. Corona
 AM. Crowd pressure
 AM. Cultural history
 AM. Earth energy
 AM. Ecological lense
 AM. Fairytale forest
 AM. Forest structure
 AM. Forest/ heath fire
 AM. Graves & gallows
 AM. Landscape vision
 AM. Mandala
 AM. Nat' burial & Ash fields
 AM. Nitrogen & Climate
 AM. Open landscape
 AM. Place attachment
 AM. Rust/stiltegebied
 AM. Tranquillity
 AM. Tree aesthetics
 AM. Wilderness, being in ~

B.4. Attributes – general ('A' codes)

A. Alienation from nature
 A. Animal symbolism
 A. Art
 A. Art, Nature/Land/Forest

(continued on next page)

(continued)

A. Avoiding 'spirituality'
 A. Career choice
 A. Childhood
 A. Compassion
 A. Culture
 A. Damage & loss
 A. Danger, fear, vulnerable
 A. Diff. persp'ves
 A. Dowse
 A. Eco-resistance
 A. Emotions
 A. Enlightenment, Clean
 A. Fireplace, fire
 A. Flow experience
 A. Forces of nature
 A. Future
 A. Gender
 A. Grief & Loss
 A. Ignorance/Ego/Power
 A. Incr'ng spir. activ.
 A. Indigenous/Eastern
 A. Inner nature
 A. Intuition
 A. Magical moment
 A. Making tangible
 A. Money
 A. Nature experience
 A. Non-judgement
 A. Oneness
 A. Openness to SV
 A. Paganism/Celtic
 A. Place names
 A. Pollution/destruction
 A. Rational
 A. Remembrance
 A. Resonance
 A. Sensemaking
 A. Social media
 A. Solstice
 A. Spiritual Values
 A. Stress relief
 A. Tipping point
 A. Tree/plant symbolism
 A. Trend & Transformation
 A. Trust
 A. Vocation
 A. Warrior symbolism
 A. Wisdom of forests
 A. World crisis
 A. Writing & publishing
 A. WV Care for nature
 A. WV Evolutionary
 A. WV Man above nature
 A. WV Nature God's gift to people
 A. WV Participant

Appendix C. Workshop 'Spirituality and forest management' - specifications and responses

C.1. Workshop specifications

Workshop title: Spirituality and forest management

Workshop website: <https://beheerdersdag.nl/programma2022/spirituelewaarden/>

Event: 14th National Area Managers' Day ('Beheerdersdag'), <https://beheerdersdag.nl/>

Date/time: Friday 23 September 2022 from 15:00–15:45 h

Location: Hunting Room, Lordship Mariënwaard Estate Beesd, Netherlands

Number of participants: 60

Software used: Mentimeter (<https://www.mentimeter.com/>).

C.2. Programme including Mentimeter questions:

Brief Introduction**Mentimeter Session 1, Questions:**

1. What comes to mind when you think about spirituality in nature?
2. How important is spirituality in nature for you?
3. Do you notice anything 'spiritual' in your work?

Presentation

Presentation of preliminary results of researchers PhD research

Available on: [website contains authors' information] (in Dutch)

Mentimeter Session 2, Questions:

4. Please provide examples of spirituality in your own work
5. Can you handle spirituality in your work?
6. What kind of assistance could be of use to you? Would you like to learn more, exchange experiences, follow workshops, etc.?

Final Discussion

C.3. Answers to Mentimeter Questions**Mentimeter Question 1. What comes to mind when you think about spirituality? (N = 43)****Word cloud words mentioned (originally in Dutch)**

A world of thought Spiritual_idols
 Authentic living, conscious_living Meditating
 Be Open
 Belief
 Belief Feeling Cosmos
 Believe Feeling
 Commitment
 Connection
 Connection Awareness
 Connection Become aware Value
 Connection Cosmos Value
 Connection Energy Feeling Earth
 Connection_with_intangible
 Consciousness
 Contemplation Thoughts Relationships Philosophy Experience Being
 Different view
 Earthly elements
 Energy (2x)
 Energy Belief
 Enrichment Belief
 Exalted
 Feeling
 Feeling Depth Religion Connectedness Deeper Meaning Mindful
 Gods Contemplation Holistic Meditative Sub-conscious
 Inner Rest
 Intuition (2x)
 Life Love Nature
 Live Endless
 Live together
 Love
 mystic ritual belief shaman celtic
 Mythology Legends All_is_1
 Nature
 Nature Sacred Awareness
 One always ONE and-ALWAYS
 Oneness Intuition Own nature Here_and_now
 Oneness Mind_and_body
 Openness
 Peace and quiet Large_trees Power
 PhilosophyTranquillity Awareness
 Rituals
 Searching
 Sick Freedom Together
 Soaring
 Soaring Back_to_yourself Thoughts Peace
 Soaring Closer_to_your_core Vague_world Other dimension
 Soaring Religion Tree-hugging Respect Mother Earth
 Soaring Tranquillity Quiet Vast Inner Zen
 Stories
 Survival mechanism Fend off Divine Personal_development Connection
 Timeless
 Tranquillity (5x)
 Tranquillity Intangible
 Tranquillity Together Wholeness Nature Love
 Trust Belief

(continued on next page)

(continued)

Unification Blending
 Values Humans Nature Protection Passion
 Witches Moon Scary Women
 Yep

Mentimeter Question 2. How important is nature spirituality for you? (N = 49)

Completely unimportant	4	8,2 %
Somewhat important	21	42,9 %
Quite important	12	24,5 %
Highly important	12	24,5 %

Mentimeter Question 3: Do you notice anything 'spiritual' in your work? (N = 50)

Never	17	34,0 %
Occasionally	19	38,0 %
Regularly	10	20,0 %
All the time	4	8,0 %
I'm not sure	0	0,0 %

Mentimeter Question 4: Please provide examples of spirituality in your own work**Answers (N = 40) (originally in Dutch):**

Adoption trees
 Aesthetic nature elements
 Art in the forest
 Autochthonous populations
 Back to nature
 Benches
 Birch tapping
 Branch formations
 Burial mounds (2x)
 Burial mounds and crashed war plane
 Camping off the grid
 Carvings in trees
 Celestial post
 characteristic trees that are visited
 Church service
 Cultural-historical buildings
 Cultural-historical design
 Cultural-historical elements
 Cultural-historical or historical value of old (autochthonous) trees
 Dare to follow your own intuition
 Disperse ashes (4x)
 Engravings
 Experience
 Fever tree
 Find angel idols in the forest
 Finding a witch circle
 Forest bathing (2x)
 Full moon walk
 Gedenktekens
 Green vitamins
 Keep connection with all users
 Labyrinths
 Land art (2x)
 Learning to see
 Leaving memorials behind after ash dispersal
 Listening
 Loves carved in tree
 Maintenance of ruins
 Memorial bench
 Memorial benches and trees
 Memorial tree, trees (3x)
 Memorials in the forest
 Midwinter celebration (2x)
 Misummer celebration

(continued on next page)

(continued)

Misummer; Midwinter celebration
 Monument after suicide
 Moondance, cuddle trees, sacred stones, Memorial tree
 Names carved in trees
 Natural burial (5x)
 Natural burial site
 Nature art
 Nature experience
 No (4x)
 Old intact forest
 Old trees (2x)
 People wanting to practise yoga in a nature area
 Places where ashes have been dispersed
 Protest
 Quiet walks
 Say sorry to a tree at felling
 Special encounters with animals
 Stealing of tinder mushrooms
 Stone mandala (2x)
 Stone piles
 The Magic tree
 The Witches' Tree, 2019 Tree of the Year! [See <https://www.rootsmagazine.nl/bomen-en-planten/boom-van-het-jaar>]
 Tree security check and then also consider the tree's interest
 Tree-hugging
 Use senses well
 Volunteering by people with care needs
 Voodoo practices
 Voodoo practices at full moon
 Whimsical forest on a misty morning
 Yes, meeting animals and children
 Yoga, nature experience walks, sweat lodge, energetic work with trees

Mentimeter Question 5. Can you handle spirituality in your work?

Answers (N = 43)

Not important for me	5	11,6 %
No, I often get stuck	3	7,0 %
Yes, but I don't know if I'm doing it right	6	14,0 %
Oh yes, that's going pretty well	20	46,5 %
No idea	9	20,9 %

Mentimeter Question 6. What kind of assistance could be of use to you? Would you like to learn more, exchange experiences, follow workshops, etc.?

Answers (N = 33) (originally in Dutch)

General
 I think area managing organizations should get more attention for this subject. Offer more space. Now everything is focused on ecology and there is almost no attention for this aspect that does attract many people to the forest.
 All of the above
Attitude, mindset
 Be open for it and admit it
 Inspiration
Exchange of experiences and insights
 Share experience
 Exchange experiences (7x)
 Exchange experiences with other managers
 Exchange knowledge and experience
 Visit peers and look at their forests
 Practical tips from peers
 Learning from other nature managers
 Learning from others' experiences
Acquire experience
 Contact with visitors of the area, how to communicate
 Gain experience
 Experiences of users'
 Learning
 Learn to recognize
 Investigate
Reading
 Reading about it

(continued on next page)

(continued)

Reading about this subject
 Literature about spirituality
Platform
 Platform
 Brainstorm
 Have a roundtable
Workshops
 More workshops
 Workshops (2x)
 Workshops with field visits
 Keep attention for this subject on events such as this one
Concrete issues / action
 Concretize
 How to create space
 How to convert into tree-marking instructions?
 How to measure?
 Factors to be taken into account
 Fine examples
 Where are the special places in the forest for people
 Explain on 1 A4, simply
No thanks
 I don't need help
 Kindly offered, but no thanks;-)

Appendix D. Responses to the Questionnaire

Title: Spirituality in the practice of forest management

Format: Google Forms

Distribution: through a flyer distributed at the Area Managers' Day, Beesd (NL), 23 September 2022.

Text: The full text of the questionnaire is available with the first author.

Respondents: 11

Answers to the questions

Question 1. My work in the practice of forest management includes:

Answers (N = 11):	#	%
Planning and or Coördination of area management	4	36,4
Communication and education	2	18,2
Area management policy	2	18,2
Other (specify).....		
- All of the above	1	9,1
- Area caretaker	1	9,1
- Tree marking operations	1	9,1

Question 2. What comes to mind when you think about spirituality in the practice of forest management?

Answers (N = 11):
 Circle of life
 Conscious attention for the 'essence' of the area and what lives in it and visits it
 Conserve the cohesion of all life
 Feeling what I am doing. Monthly calendar
 Historic customs in relation to spirituality
 How people experience nature, the emotions they attach to it
 Intrinsic value
 Talking with trees
 The restfulness of the forest
 Vagueness
 Wonder about places and the situational [nature] of nature

Question 3. How important is spirituality for you in your work?

Answers (N = 11):	#	%
Not at all important	1	9,1
Neither important nor unimportant	3	27,3
Important	7	63,6

Question 4. Have you ever been contacted about spiritual activities? For instance, yoga, meditation, coaching, rituals, 'forest bathing', collecting items, visiting power places, etc., etc.

Answers (N = 11):	#	%
Never	5	45,5
Occasionally	6	54,5

Question 5. Have you ever encountered people, activities, or items in your area that are associated with spirituality?

Answers (N = 11):	#	%
A. Yes, often	2	18,2
B. Yes, sometimes	5	45,5
C. Not directly, but I suspect something is going on	1	9,1
D. Never	3	27,3

Question 6. If you selected A or B in Question 5, who or what do you encounter? (feel free to explain!)

Answers (N = 4):		
Burial rituals (domestic animals); Use of 'land art' areas for rituals; 'Zen' places; Yoga in nature.		
Religion		
I am the manager of a memorial forest: personal mementos, Tibetan prayer flags, memorial trees, memorial wood disks		
Pieces of art, people organising mindful walks, courses.		

Question 7. Do you agree with this statement: "Foresters know too little about spirituality in the practice of forest management"

Answers (N = 11):	#	%
Don't agree	2	18,2
Neutral	6	54,5
Agree	3	27,3

Question 8. Do you agree with this statement: "The practice of forest management benefits from foresters being knowledgeable about spirituality and capable of dealing with it"?

Answers (N = 11):	#	%
Don't agree	3	27,3
Neither agree nor disagree	4	36,4
Agree	4	36,4

Question 9. Would you like to learn more from spirituality in the practice of forest management?

Answers (N = 10):		
Everything		
Info about what's going on		
Practical examples		
Yes, other people's views		
First exactly know what it means, only then I can say something about it		
I haven't thought about it yet and therefore I cannot think much of it		
No, I learn enough about it in practice		
No		
No		
No, not necessary		

Question 10. Do you have any comments or questions?

No comments from all respondents

Appendix E. Themes 3 and 4 (minor themes)

E.1. Theme 3: Forest spirituality in narratives and the past

Theme 3 refers to the sense of mystery evoked by local legends and physical remnants of the past. This is a minor theme dominated by the **Mythical-Narrative dimension (D6)** (see Fig. E.1). Many such stories are about trees, forests, spirits, or water: *"There's this theatre organization, focused on storytelling, and we hire them in. And the stories they tell are about the myths of this area, because they are the characteristics of this nature area. It used to be a swamp, a very big swamp of 60 kms long, a long time ago. It was something very mysterious and dangerous. And there are a lot of things happening that no one could explain. That's why myths exist, of course. So there are quite some stories about these mysterious characteristics of [my area]." (13:14)*. One forester associated spirituality with history and archaeology: *"What does spirituality mean for you?" "Well, I'm an amateur archaeologist myself and I find Celtic history super interesting. Fortunately, I'm in a good area for that. There are a lot of burial mounds here" (33:1)*. Cultural history is not a priori 'spiritual', but it has the potential to elicit people's interest: *"I think there are more people interested in history than purely in nature.. Once we had an information evening about [a former monastery]. When I have an evening for people to hear something about nature, 100 people make a good night. Then there is*

a lot of interest. But on the night when we talked about the history of that place, over 300 people came" (15:15). Therefore, under the aegis of cultural heritage and history, spiritual connotations may be deployed to connect people with forest and nature.

E.2. Theme 4: The ineffable aspects of forest spirituality

This last minor theme covers the three rarest dimensions, which, each in their own way, relate to the ineffable aspects of spirituality (see Fig. E.2). The *Experiential-Unspecified* dimension refers to spirituality that remains further unspecified; the *Life force* dimension refers to the elusive phenomenon of 'life force', also known as 'vital energy', or 'Earth energy'. The *Experiential-Aesthetic* dimension relates to the spiritual levels of aesthetic experience, which are, ultimately, also ineffable.

The *Experiential-Unspecified* dimension (D0) comprises references to spirituality that foresters struggle to make explicit. Public forest managers often relate deeply touching experiences in nature which inspire them to do their work more intuitively, but they have difficulty matching intuition with their organizations' science-based views. As one forester remembers: "When you want to work from your intuition, and when you want to work from your heart, and you are still in an organization which has traditional politics" (5:67). They add that there is more openness now: "That's interesting that people are open for it now. And it's not only the minds but it's.. when we, whatever, experience nature from the hearts.. we don't talk about it, but everyone knows. It's good that its in the open now." (5:70). Large organizations now employ special foresters for communication: "We have a forester who is especially engaged [for communication], that is their job. But this person is also quite involved in, say, the spiritual. And so, for instance, this forester was very involved in poems and they organised a poetry route. (9:45)". In contrast, engaging spirituality in technical forest management is more easily realized by private foresters: "Yes, spirituality, I can hardly pronounce the word but it is a matter of feeling. When you walk in the woods I take it into account, I look at the trees and the forests, how it behaves. Is it native or is it exotic? We are going to try those [native] tree species again and put them in between [the existing trees]. And how do they feel among those other trees? That is always the question" (24:16).

The *Experiential-Life force* dimension (D4) appears among both groups of foresters. It is expressed in references to 'Earth energy', understood to be subtle energies in trees and the landscape that can be sensed by intuition, and aided by dowsing and other intuitive practices: "Those high areas that have not changed at all; I think that is very special because it means that the original structure, the hydrology, but also the energy points, are still there. They have not been moved or changed by other interventions. You can still find those points in [my area], there you have specific ley lines and energy fields" (27:51). Two public forest managers reported that their forest areas were energetically 'balanced' by a group of experts specialized in this work. Rituals are also performed for energetic healing of the forest: "I asked people from all around the world if they could send energy to the burnt forest. A couple of years later the heather was really nicely restored. So, for me all this energy stuff is real" (5:41; 5:42; 5:45). Some private foresters also work purposely with 'Earth energy' in the management of their estate: "Power spots were created in various places, also known as power development [places], by planting groups of trees that run in certain sightlines and those sightlines are maintained so that you can look very far" (28:13).

The *Experiential-Aesthetic* dimension (D1) is expressed in references to beautiful trees, old growth, meeting wild animals, and tranquillity. Not all aesthetic experiences are spiritual, but some are: "I have those experiences almost weekly. And it can be very small scale, [like] something which you see on a tree. It could be a bird or... I have some memories of simple situations that you're standing in the field and it's the fog or it's the absolute silence you notice, or it's a deer that is standing before you. It can also be the rain. So, personally, I'm sometimes really touched by these moments. [...] And it's never one place or one situation or one type of animal. It's, it's, overcoming, eh.. it happens without searching [for] it" (10:43, 44). It is difficult to find the boundary between the 'non-spiritual' levels of aesthetics and the two highest levels, which qualify as 'spiritual' (Roncken, 2018). One reason is that many foresters were not able to articulate their aesthetic experiences precisely. Another reason is the impossibility to determine whether the 'aesthetic' management practices mentioned by foresters are related to these spiritual-aesthetical levels. We therefore only counted aesthetic measures as 'spiritual' when foresters described their own aesthetic experiences as such, and when they mentioned concrete measures at some point in the same interview. These were, in particular: placing benches at viewpoints, protection, restoration, zoning and selection when felling trees. There is also a link with the *Experiential-Life force* dimension: "It's actually an old production forests, but with really big trees. They're all planted in lines; but it really has this mysterious vibe, you know, it's a little dark there, and there's a lot of moss and ferns. So sometimes I find myself wandering through this forest, and the size of the trees, the moist environment and the darkness, and also the silentness, that really, really attracts me. Even though from a forest manager's perspective it's just super boring. With less ecological values than outside that forest. Yeah, I really like that part" (13:37).

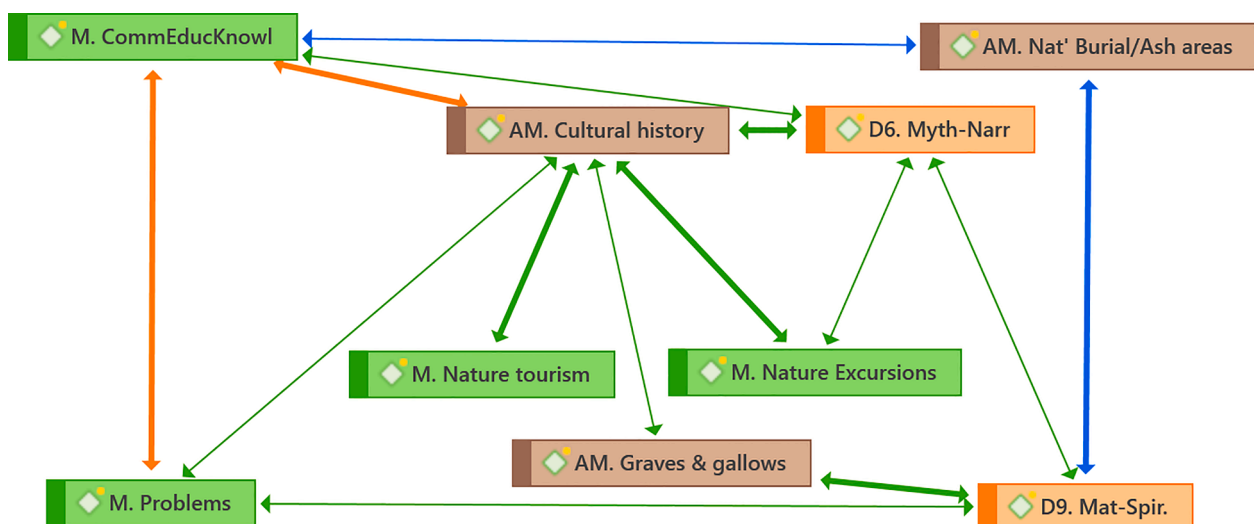


Fig. E.1. Network constituting Theme 3, Forest spirituality in narratives and the past.

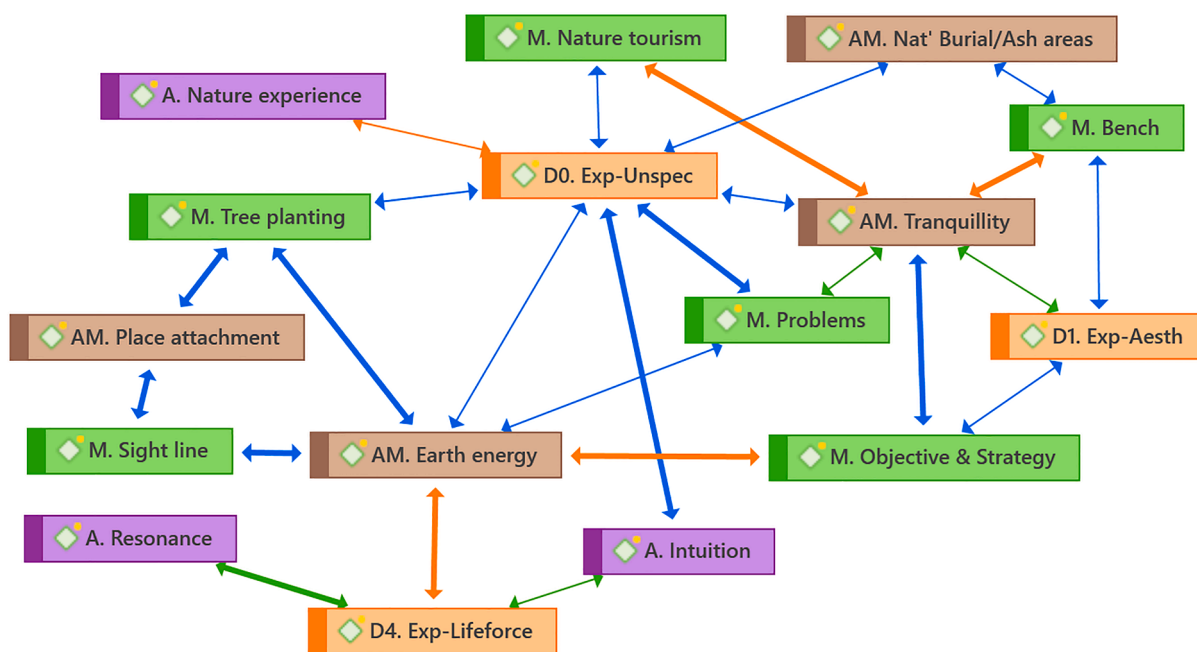


Fig. E.2. Network constituting Theme 4, The ineffable aspects of forest spirituality.

References

- Angelsen, A., 2013 [2007]. Forest cover change in: space and time: combining The Von Thunen and forest transition theories. In: Policy Research Working Papers 4117. World Bank. doi:10.1596/1813-9450-4117.
- Arts, B., Béhagel, J., van Bommel, S., De Koning, J., Turnhout, E., 2013. Prelude to practice: introducing a practice based approach to forest and nature Governance. Ch. 1. Arts, B., Béhagel, J., van Bommel, S., De Koning, J., Turnhout, E. Forest and Nature Governance. A Practice Based Approach. Springer, pp. 3–21. ISBN: 978-94-007-5112-5.
- Barragan-Jason, G., De Mazancourt, C., Parmesan, C., Singer, M., Loreau, M., 2021. Human-nature connectedness as a pathway to sustainability: a global meta-analysis. *Conserv. Lett.* 15 (1) <https://doi.org/10.1111/conl.12852>. hal-03768696.
- Barrows, P.D., Richardson, M., Hamlin, I., Van Gordon, W., 2022. Nature connectedness, nonattachment, and engagement with nature's beauty predict pro-nature conservation behavior. *Ecopsychology* 14 (22), 83–91. <https://doi.org/10.1089/eco.2021.0036>.
- [1997] Bawden, R., 2010. The community challenge: the learning response. Ch. 3. In: Blackmore, C. (Ed.), *Social Learning Systems and Communities of Practice*. Springer, pp. 39–56. <https://doi.org/10.1007/978-1-84996-133-2>.
- Belal, M., Vijayakumar, V., Prasad, K.N., Jois, S.N., 2023. Perception of subtle energy "Prana", and its effects during Biofield practices: a qualitative meta-synthesis. *Glob. Adv. Integr. Med. Health* 12, 1–15. <https://doi.org/10.1177/27536130231200477>.
- Buijs, A., Lawrence, A., 2013. Emotional conflicts in rational forestry: towards a research agenda for understanding emotions in environmental conflicts. *For. Policy. Econ.* 33, 104–111. <https://doi.org/10.1016/j.forpol.2012.09.002>.
- Buijs, A.E., Arts, B., Elands, B.H.M., Lengkeek, J., 2011. Beyond environmental frames: the social representation and cultural resonance of nature in conflicts over a Dutch woodland. *Geoforum* 42 (3), 329–341. <https://doi.org/10.1016/j.geoforum.2010.12.008>.
- Caillon, S., Cullman, G., Verschuuren, B., Sterling, E.J., 2017. Moving beyond the human-nature dichotomy through biocultural approaches: including ecological well-being in resilience indicators. *Ecol. Soc.* 22 (4), 1–10. <https://doi.org/10.5751/ES-09746-220427>.
- Campbell, C., 2007. *The Easternization of the West. A thematic Account of Cultural Change in the Modern Era*. Paradigm. ISBN: 978-1-59-451-224-7.
- Chan, K.M.A., Guerry, A.D., Balvanera, P., Klain, S., Satterfield, T., Basurto, T., Bostrom, A., Chuenpagdee, R., Gould, R., Halpern, B.S., Hannahs, N., Levine, J., Norton, B., Ruckelshaus, M., Russell, R., Tam, J., Woodside, U., 2012. Where are cultural and social in ecosystem services? A framework for constructive engagement. *Bioscience* 62 (8), 744–756. <https://www.jstor.org/stable/10.1525/bio.2012.62.8.7>.
- Chan, K.M.A., Balvanera, P., Benessaiah, K., Chapman, M., Díaz, S., Gómez-Baggethun, E., Gould, R., Hannahs, N., Jax, K., Klain, S., Luck, G.W., Martín-Lopez, B., Muraca, B., Norton, B., Ott, K., Pascual, U., Satterfield, T., Tadaki, M., Taggart, J., 2016. Why protect nature? Rethinking values and the environment. *Proc. Natl. Acad. Sci. USA* 113 (6), 1462–1465. <https://doi.org/10.1073/pnas.1525002113>.
- Chandran, M.D.S., Hughes, J.D., 2000. Sacred groves and conservation: the comparative history of traditional reserves in the Mediterranean Area and in South India. *Environ. Hist. Camb.* 6 (2), 169–186. <https://www.environmentandsociety.org/mml/sacred-groves-and-conservation-comparative-history-traditional-reserves-mediterranean-area-and>.
- Choné, A., 2017. *Ecospirituality*. Choné, A., Hajek, I., Hamman, P. Rethinking nature. Challenging Disciplinary Boundaries. Routledge, pp. 38–48, 978-1-138-21493-4.
- Chun Tie, Y., Birks, M., Francis, K., 2019. Grounded theory research: a design framework for novice researchers. *SAGE Open. Med.* 7. <https://doi.org/10.1177/2050312118822927>.
- Coggins, C., Minor, J., Chen, B., Zhang, Y., Tiso, P., Lam, J., Gultekin, C., 2019. China's community Fengshui forests: spiritual ecology and nature conservation. Ch. 15. In: Verschuuren, B., Brown, S. (Eds.), *China's community Fengshui forests: spiritual ecology and nature conservation*. Ch. 15. Cultural and Spiritual Significance of Nature in Protected Areas. Governance, Management and Policy 225–237. ISBN: 978-1-315-10818-6.
- Cooper, N., Brady, E., Steen, H., Bryce, H., 2016. Aesthetic and spiritual values of ecosystems: recognising the ontological and axiological plurality of cultural ecosystem 'services'. *Ecosyst. Serv.* 21, 218–229. <https://doi.org/10.1016/j.ecoser.2016.07.014>.
- De Pater, C., Scherer-Rath, M., Mertens, F., 2008. Forest managers' spiritual concerns. *J. Empir. Theol.* 21 (1), 109–132. <https://doi.org/10.1163/092229308x310768>.
- De Pater, C., Elands, B., Verschuuren, B., 2021. Spirituality in forest management: a conceptual framework for empirical research. *J. Study Relig., Nat. Cult.* 15 (2), 204–228. <https://doi.org/10.1558/jsrnc.41999>.
- De Pater, C., Verschuuren, B., Elands, B., Van Hal, I., Turnhout, E., 2023. Spiritual values in forest management plans in British Columbia and the Netherlands. *For. Policy. Econ.* 51, 102955. <https://doi.org/10.1016/j.forpol.2023.102955>, 2023.
- De Pater, C., 2015. Spiritual experiences in nature, eco-friendliness and human well-being. Park, S.A., Shoemaker C., In: *Proceedings XIth International People Plant Symposium on Diversity: Towards a New Vision of Nature, 1093*. Acta Horticulturae. <https://doi.org/10.17660/ActaHortic.2015.1093.19>, 269–178.
- De Pater, C., 2024. Dataset Spiritual Values in Forest Management Practices. Mendeley Data V1. <https://doi.org/10.17632/dycj24dypn.1>.
- Den Ouden, J., Verheyen, K., Muys, B., Mohren, F., 2010. Bos en bosbeheer in Vlaanderen en Nederland. Ch. 1. In: Muys, B., Mohren, F., Verheyen, K. (Eds.), *Bos ecologie En Bosbeheer*. Acco, pp. 19–23. ISBN: 978-90-334-7782-9.
- Derks, J., Giessen, L., Winkel, G., 2020. COVID-19-induced visitor boom reveals the importance of forests as critical infrastructure. *For. Policy. Econ.* <https://doi.org/10.1016/j.forpol.2020.102253>, 118–102253.
- Driver, B.L., Dustin, D., Baltic, T., Elsner, G., Peterson, G., 1999. Nature and the human spirit: overview. In: Dustin, D., Baltic, T., Elsner, G., Peterson, G. (Eds.), *Nature and the Human Spirit*. Venture, pp. 3–8. ISBN: 0-910251-82-7.
- Elands, B.H.M., Vierikko, K., Andersson, E., Fischer, L.K., Gonçalves, P., Haase, D., Kowarik, I., Luz, A.C., Niemelä, J., Santos-Reis, M., Wiersum, K.F., 2019. Biocultural diversity: a novel concept to assess human-nature interrelations, nature conservation

- and stewardship in cities. *Urban. For. Urban. Green.* 40, 29–34. <https://doi.org/10.1016/j.forpol.2012.03.004>.
- Fitzgerald, T., 1996. Religion, philosophy and family resemblances. *Religion* 26:3, 215–236. <https://doi.org/10.1006/reli.1996.0017>.
- F. Fjeldsted, T., 2019. Exploring spiritual and religious values in landscapes of production: lessons and examples from Italy. Ch. 18. In: Verschuren, B., Brown, S. (Eds.), *Cultural and Spiritual Significance of Nature in Protected Areas. Governance, Management and Policy*. Routledge, pp. 264–277. ISBN: 978-1-138-09119-1.
- Focacci, M., Ferretti, F., De Meo, I., Paletto, A., Costantini, G., 2017. Integrating stakeholders' preferences in participatory forest planning: a pairwise comparison approach from southern Italy. *Int. Forestry Rev.* 19 (4), 413–422. <https://doi.org/10.1505/146554817822272349>.
- Food and Agriculture Organisation of the United Nations (FAO) 2018. *The State of the World's Forests 2018 – forest pathways to sustainable development*. <http://www.fao.org/documents/card/en/c/19535EN/>.
- Forest Stewardship Council (FSC), 2022. The FSC National Forest Stewardship Standard of the Kingdom of The Netherlands. FSC-STD-NLD-02.1–2021 EN. <https://nl.fsc.org/sites/default/files/2022-01/FSC-STD-NLD-02.1-2021%20EN.The%20FSC%20National%20Stewardship%20Standard%20of%20The%20Kingdom%20of%20The%20Netherlands%20%28February%202022%29.pdf>.
- FSC (Forest Stewardship Council) (2023). FSC principles and criteria for forest Stewardship. Online: <https://open.fsc.org/server/api/core/bitstreams/0e2f50a2-bb15-4697-aa39-42d878506bbd/contentFscaroli>.
- Govigli, V.M., Bruzzese, S., 2023. Assessing the emotional and spiritual dimension of forests: a review of existing participatory methods. *For. Policy. Econ.* 153, 102990. <https://doi.org/10.1016/j.forpol.2023.102990>.
- Govigli, V.M., Efthymiou, A., Stara, K., 2021. From religion to conservation: unfolding 300 years of collective action in a Greek sacred forest. *For. Policy. Econ.* 131, 102575. <https://doi.org/10.1016/j.forpol.2021.102575>.
- Hanegraaf, W.J., 1998. *New Age Religion and Western Culture; Esoterism in the Mirror of Secular Thought*. State University of New York Press. ISBN: 0-7914-3854-6.
- Hedlund-de Witt, A., 2011. The rising culture and worldview of contemporary spirituality: a sociological study of potentials and pitfalls for sustainable development. *Ecol. Econ.* 70 (6), 1057–1065. <https://doi.org/10.1016/j.ecolecon.2011.01.020>.
- Hulle, Van, Grotenhuis, 2020. Arbeidsmarktstructuur Sector Agrarisch En Groen in beeld. (A Portrait of the Labour Market Structure in the Agricultural and Green sector, in Dutch). ABF Research, Colland. https://www.vbne.nl/Uploaded_files/Zelf/arbeidsmarkt-colland-2020.8e7ef5.pdf.
- Isyaku, U., 2021. What motivates communities to participate in forest conservation? A study of REDD+ pilot sites in Cross River, Nigeria. *Forest Policy Econ.* 133, 102598. <https://doi.org/10.1016/j.forpol.2021.102598>.
- Ivakhiv, A., 2005. *Earth Mysteries*. In: Taylor, B. (Ed.), *The Encyclopedia of Religion and Nature*. Thoemmes Continuum, pp. 525–528. ISBN: 1-84371-138-9.
- Ives, C.D., Abson, D.J., Von Wehrden, H., Dorminger, C., Klaniacki, K., Fischer, J., 2018. Reconnecting with nature for sustainability. *Sustain. Sci.* 13, 1389–1397. <https://doi.org/10.1007/s11625-018-0542-9>.
- Johnson, L., 2014. Adapting and combining constructivist grounded theory and discourse analysis: a practical guide for research. *Int. J. Mult. Res. Approaches.* 8 (1), 100–116. <https://doi.org/10.5172/mra.2014.8.1.100>.
- Kumar, R., 2014. *Research methodology. A Step-By-Step Guide for Beginners*. Sage. ISBN: 978-1446-269978.
- Ch. 12 Lewis, J., Sheppard, S.R.J., 2013. First nations' spiritual conceptions of forests and forest management. In: Tindall, D.B., Trosper, R.L. (Eds.), *Aboriginal Peoples and Forest Lands in Canada*. UBC Press, 205–222. ISBN: 978-07748-23357.
- Mather, A.S., 1992. The forest transition. *Area* 24 (4), 367–379. <https://www.jstor.org/stable/20003181>.
- Mattijssen, T., Ganzevoort, W., Van den Born, R.J.G., Arts, B.J.M., Breman, B.C., Buijs, A. E., Van Dam, R.I., Elands, B.H.M., De Groot, W.T., Knippenberg, L.W.J., 2020. Relational values of nature: leverage points for nature policy in Europe. *Ecosyst. People* 16 (1), 402–410. <https://doi.org/10.1080/26395916.2020.1848926>.
- Mazumdar, S., Mazumdar, S., 2004. Religion and place attachment: a study of sacred places. *J. Environ. Psychol.* 24 (3), 385–397. <https://doi.org/10.1016/j.jenvp.2004.08.005>.
- McCorquodale, S.M., Leach, R.H., King, G.M., Bevis, K.R., 1997. The Yakama Indian reservation: integrating native American values into commercial forestry. *J. For.* 95, 15–18. <https://doi.org/10.1093/jof/95.11.15>.
- Mills, J., Birks, M., Hoare, K., 2017. Grounded theory. Pages 107–122 in Mills, J., Birks, M. *Qualitative Methodology – A Practical Guide*. SAGE. <https://doi.org/10.4135/9781473920163>.
- Ministerial Conference for the Protection of Forests in Europe (MCPFE), 2002. In: Improved Pan-European Indicators for Sustainable Forest Management as adopted by the MCPFE Expert Level Meeting 7–8 October 2002. Vienna, Austria. https://foresteurope.org/wp-content/uploads/2022/01/Vienna_Improved_Indicators.pdf.
- Ministerie van Landbouw, Natuur en Voedselkwaliteit (LNV), Interprovinciaal Overleg (IPO), 2020. Ambities En Doelen Van Rijk en Provincies Voor De Bossenstrategie. Publicatienr. 1219057. <https://open.overheid.nl/documenten/ronl-6fa96f4b-c9ad-484a-a266-185436479b39/pdf>.
- Natuurcollege, 2022. Wie zijn wij. <https://www.natuurcollege.nl/over-ons-2/> [Accessed 22 October 2023].
- Natuurmonumenten, 2022. Jaarverslag 2021. 110 pp. <https://res.cloudinary.com/natuurmonumenten/raw/upload/v1654179954/2022-06/Jaarverslag%20Natuurmonumenten%202021.pdf>.
- Natuurmonumenten, n.d. Veelgestelde vragen over gebiedstoestemming Natuurmonumenten. <https://www.natuurmonumenten.nl/natuurgebieden/veelgestelde-vragen-gebiedstoestemming>.
- Pascual, U., Balvanera, P., Christie, M., 2022. Summary for policymakers of the methodological assessment report on the diverse values and valuation of nature of the intergovernmental science-policy platform on biodiversity and ecosystem services. <https://zenodo.org/record/6832427>.
- Pedroli, B., During, R., 2019. De Paradox Van Een Maakbare Natuur – Ingebakken En Omstreden. Wageningen University and Research. Wot-Technical Report 166. <https://edepot.wur.nl/512092>.
- Pichlerová, M., Onkal, D., Bartlett, A., Výbostok, J., Pichler, V., 2021. Variability in forest visit numbers in different regions and population segments before and during the COVID-19 pandemic. *Int. J. Environ. Res. Public Health* 18 (7), 3469. <https://doi.org/10.3390/ijerph18073469>.
- Plieninger, T., Abunnasr, Y., D'Ambrosio, U., et al., 2023. Biocultural conservation systems in the Mediterranean region: the role of values, rules, and knowledge. *Sustain. Sci.* 18, 823–838. <https://doi.org/10.1007/s11625-022-01155-6>.
- Ponelis, S.R., 2015. Using interpretive qualitative case studies for exploratory research in doctoral studies: a case of information systems research in small and medium enterprises. *Int. J. Doctoral Stud.* 10, 535–550. <http://ijds.org/Volume10/1JDSv10p535-550Ponelis0624.pdf>.
- Raymond, C.M., Kytä, M., Stedman, R., 2017. Sense of place, fast and slow: the potential contributions of affordance theory to sense of place. *Front. Psychol.* 8 (1674), 1–14. <https://doi.org/10.3389/fpsyg.2017.01674>.
- Raymond, C.M., Anderson, C.B., Athayde, S., Vatn, A., Amin, A., Arias-Arevalo, P., Christie, M., Cantu-Fernandez, M., Gould, R.K., Himes, A., Kenter, J.O., Lenzi, D., Muraca, B., Muali, R., O'Connor, S., Pascual, U., Sachdeva, S., Samakov, A., Zent, E., 2023. An inclusive values typology for navigating transformations toward a just and sustainable future. *Curr. Opin. Environ. Sustain.* 64, 101301. <https://doi.org/10.1016/j.cosust.2023.101301>.
- Roncken, P.A., 2018. *Shades of Sublime. A Design for Landscape Experiences As an Instrument in the Making of Meaning*. Wageningen University. <https://doi.org/10.18174/427612>. PhD Thesis.
- Roux, J.L., Konczal, A., Bernasconi, A., Bhagwat, S.A., De Vreese, R., Valentino, I.D., Govigli, M., Kaspar, J., Kohsaka, R., Pettenella, D., Plieninger, T., Shakeri, Z., Shibata, S., Stara, K., Takahashi, T., Torralba, M., Tyrväinen, L., Weiss, G., Winkel, G., 2022. Exploring spiritual values of forests from Europe and Asia – towards a transition hypothesis. *Ecol. Soc.* 27 (4), 20. <https://doi.org/10.5751/ES-13509-270420>.
- Saler, B., 2000. *Conceptualizing Religion: Immanent Anthropologists, Transcendent Natives, and Unbounded Categories* [1993]. Berghahn Books. ISBN: 1-57181-219-9.
- Satterfield, T., 2002. *Anatomy of a Conflict: Identity, Knowledge, and Emotion in Old-Growth Forests*. UBC Press. ISBN: 0-7748-0893-4.
- Schama, Simon., 1995. *Landscape and Memory*. ISBN: 978-00021-58978.
- Schellaas, M.J., Teeuwen, S., Oldenburger, J., Beekens, G., Velema, G., Kremers, J., Lerink, B., Paulo, M.J., Schoonderwoerd, H., Daamen, W., Dolstra, F., Lusink, M., Van Tongeren, K., Scholten, T., Voncken, F., 2022. *Zevende Nederlandse Bosinventarisatie (Seventh Forest Inventory in the Netherlands)*. In: Wot Report 142. Statutory Research Tasks Unit for Nature and the Environment. Wageningen. <https://research.wur.nl/en/publications/zevende-nederlandse-bosinventarisatie-methode-en-resultaten>.
- Schwartz-Shea, P., Yanow, D., 2012. *Interpretive Research Design: Concepts and Processes*. Routledge. ISBN: 978-0-415-87808-1.
- Smart, N., 1996. *Dimensions of the Sacred. An Anatomy of the World's Beliefs*. University of California Press. ISBN: 0-520-21960-0.
- Smart, Ninian., 2002. *The World's Religions*, 2nd ed. Cambridge University Press, Cambridge. ISBN. 0521-63748-1.
- Staatsbosbeheer, 2015a. Groeiende toekomst. De bosvisie van Staatsbosbeheer. <https://www.staatsbosbeheer.nl/-/media/10-wat-we-doen/bos-beheren/201509-brochure-groeiende-toekomst-bosvisie-staatsbosbeheer.pdf?la=nl-nl&hash=39EB9D3F32EE383B05E800C28F090BC6C446726E>.
- Staatsbosbeheer, 2015b. *Ziel en zakelijkheid. Ondernemingsplan Staatsbosbeheer 2020*. <https://docplayer.nl/12803043-Staatsbosbeheer-2020-ziel-en-zakelijkheid.html>.
- Staatsbosbeheer, 2023. *Kiezen en delen. Jaarverslag 2022*. <https://www.staatsbosbeheer.nl/over-staatsbosbeheer/nieuws/2023/04/jaarverslag-staatsbosbeheer-2022>.
- Stara, K., Tsiakiris, R., Wong, J.L.G., 2015. The trees of the sacred natural sites of Zagori, NW Greece. *Landsc. Res.* 40 (7), 884–904. <https://doi.org/10.1080/01426397.2014.911266>.
- Taylor, B., 2010. *Dark Green Religion. Nature Spirituality and the Planetary Future*. University of California Press. ISBN: 978-0-520-26100-6.
- Terhaar, T.L., 2005. In: *Nature, trauma, and the soul: The mystical experience in nature as a wellspring of spiritual values*. Ann Arbor, USA. PhD dissertation. ProquestUMI # 3169001.
- Thomas, S.L., Reed, S.E., 2019. Entrenched ties between outdoor recreation and conservation pose challenges for sustainable land management. *Environ. Res. Lett.* 14, 115009. <https://doi.org/10.1088/1748-9326/ab4f52>.
- Torralba, M., Lovric, M., Roux, J.L., Budniok, M.A., Mulier, A.S., Winkel, G., Plieninger, T., 2020. Examining the relevance of cultural ecosystem services in forest management in Europe. *Ecol. Soc.* 25 (3), 1–20. <https://doi.org/10.5751/ES-11587-250302>.
- Ch. 4 Tyrväinen, L., Konijnendijk, C., et al., 2023. Forests for human health – understanding the contexts, characteristics, links to other benefits and drivers of change. In: Konijnendijk, C., Devkota, D., Mansourian, S., Wildburger, C. (Eds.), *Forest and Trees for Human Health. Pathways, Impacts, Challenges and Response Options*. A Global Assessment Report. IUFRO World Series 41, pp. 125–161. <https://www.iufro.org/fileadmin/material/publications/iufro-series/ws41/ws41.pdf>.

- United Nations General Assembly (UNGA), 2008. United Nations declarations on the rights of indigenous peoples. http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf.
- Van den Berg, A.E., Ter Heijne, M., 2005. Fear versus fascination: an exploration of emotional responses to natural threats. *J. Environ. Psychol.* 25 (3), 261–272. <https://doi.org/10.1016/j.jenvp.2005.08.004>.
- Van den Brand, A. 2011. Begrip voor de ziel van het bos. Trouw 18 February 2011. <http://www.trouw.nl/nieuws/begrip-voor-de-ziel-van-het-bos~b1c3ec16/>.
- Van Trigt, A., Van Koppen, K., Schanz, H., 2003. Spirituele waarden van natuur; een analyse van spiritualiteit in relatie tot bomen en bos. *Landschap, tijdschrift voor landschapsecologie en milieukunde* 20 (3), 155–163. https://www.landschap.nl/wp-content/uploads/2003-3_155-163.pdf.
- Vellema, H., Maas, J., 2003. A conceptual framework for forest management plans. Document no. 0579-B4. XII World Forestry Congress, p. 9. <http://www.fao.org/docrep/ARTICLE/WFC/XII/0579-B4.HTM>.
- Verhoeven, L., 2015. Zingeving in De Nederlandse natuur. Wageningen University and Research. MSc. Thesis.
- Verschuuren, B., Mallarach, J., Bernbaum, E., Spoon, J., Brown, S., Borde, R., Brown, J., Calamia, M., Mitchell, N., Infield, M., Lee, E., 2021. Cultural and Spiritual Significance of Nature: Guidance for Protected and Conserved Area Governance and Management. International Union for Conservation of Nature (IUCN). <https://doi.org/10.2305/IUCN.CH.2021.PAG.32.en>.
- Von Stuckrad, K., 2003. Discursive study of religion: approaches, definitions, implications. *Method and Theory in the Study of Religion* 25, 5–25. <https://doi.org/10.1163/15700682-12341253>.
- Waaïjman, K., 2001. *Spiritualiteit; vormen, grondslagen, Methoden*. Kok. ISBN:90-435-0815-9.
- Wang, S., Blasco, D., Hamzah, A., Verschuuren, B., 2023. Tourists and ‘philosophers’: nature as a medium to consciousness and transcendence in spiritual tourism. *Ann. Tour. Res.* 99, 103543 <https://doi.org/10.1016/j.annals.2023.103543>.
- Wiersum, K.F., Sands, R., 2013. *Social Forestry*. Ch. 10. In: Sands, R (Ed.), *Forestry in a Global Context*. CABI, pp. 185–217. ISBN: 978-1-78064-158-4.
- Zylstra, M.J., Knight, A.T., Esler, K.J., Le Grange, L.L.L., 2014. Connectedness as a core conservation concern: an interdisciplinary review of theory and a call for practice. *Springer. Sci. Rev.* 2014 (2), 119–143. <https://doi.org/10.1007/s40362-014-0021-3>.