



# Spiritual values in forest management plans in British Columbia and the Netherlands

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## ABSTRACT

Spiritual values are part of major global forest-related policies and strategies for sustainable forest management. Despite ongoing research and current debates, the significance of spiritual values in sustainable forest management in the Global North remains under-theorised. As Forest Management Plans represent an important nexus between policies and practices, this study clarifies the significance of spiritual values in forest management plans. We applied a conceptual framework with nine 'dimensions of spirituality' to investigate ten plans from British Columbia (Canada) and ten plans from the Netherlands, deploying qualitative analysis through descriptive coding in Atlas.ti. We elicited and compared the spiritual dimensions represented in the underlying principles, objectives, and operational sections of forest management plans for both geographical locations. Their widespread occurrence suggests that spiritual values are considered essential elements of sustainable forest policy and management in the Global North, also in contexts with non-Indigenous populations. We grouped the articulations of the spiritual dimensions in Forest Management Plans into three themes: 'Nature Experience', 'Spiritual Use' and 'History'. A comparison of the spiritual dimensions across these themes and geographical locations yields the following insights: 1) spiritual values of forests are not only articulated in the strategic sections of forest management plans, but also in operational sections; 2) in management planning, forest spirituality is not only strongly related to experience, but also to the ('wise') use of forests and to forest-related history; 3) Spiritual values are better operationalised in adaptive forms of management planning than in formal 'technical' planning structures. This offers new ways of understanding the role of spirituality in forests management plans and contributes new insights to current debates in forest science.

## 1. Introduction

In this study we aim to understand the occurrence and role of spiritual values in forest management plans (FMPs) in the Global North. While this topic appears to be understudied it has increasingly emerged in forest policy and practice (see [Section 1.1](#) below). We systematically analysed 10 British Columbian and 10 Dutch FMPs using the conceptual framework of [De Pater et al. \(2021\)](#), specifically developed for empirical research in forest and nature-based spirituality.<sup>2</sup> We adopted the framework's initial conceptualisation of spiritual values as 'hard-to-define nature-based values that help maintain and renew the human and

non-human spirit' ([De Pater et al., 2021](#)). The multidisciplinary theoretical foundations of the conceptual framework facilitate the identification of different dimensions of spiritual values in forest management plans, even when these spiritual values are entangled with 'cultural' or other 'intangible' values. 'Cultural' values are typically defined as encompassing material, intellectual, emotional or other values besides spiritual values ([MEA, 2005](#); [Persic and Martin, 2008](#)). Such entanglement may be useful in strategic or policy debates when the aim is to position spiritual values within the broader package; however, it creates confusion when in-depth research into the nature of spiritual values is required ([De Pater et al., 2021](#)). In this study, we therefore focus

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<sup>2</sup> We here conceptualise 'spiritual values' as identifiable attributes of 'spirituality' (after [Heintzman, 2009](#)), but use the terms interchangeably in this paper for the sake of legibility.

exclusively on spiritual values.

### 1.1. Rationale

Spirituality has been an important driver for Indigenous People and Local Communities (IPLC) to increase their influence on such major global policy platforms affecting forests as the Convention on Biodiversity (Convention on Biodiversity Conservation, 2020), the International Platform on Biodiversity and Ecosystem Services (Pascual et al., 2022), and the UN Framework Convention on Climate Change (UNFCCC, 2021). In these fora IPLC have evolved from being ‘victims’ of the environmental crisis (they make up one third of the world’s rural poor, Forest Peoples Program, 2020) to ‘experts’ on biodiversity and forests. IPLC’s territories cover approximately 30% of the world’s surface and include high levels of biodiversity (Trewin et al., 2022). Their traditional knowledge and spirituality is increasingly recognised for their potential to contribute to solutions for the biodiversity and climate crisis (Pascual et al., 2022). As for forestry, this recognition coincided with the development of ‘sustainable forest management’, which requires an equal balancing of economic, ecological and social aspects in the management of all forests worldwide (UNGA, 2007). When global certification schemes for sustainable forest management (SFM) such as FSC (2022) and PEFC (2018) were established, spiritual – and cultural – values were incorporated in their criteria and indicators. Likewise, cultural and spiritual values were adopted in the standards for SFM of IUFRO (Agnoletti, 2007) and MCPFE (2002). However, such schemes and standards refer only marginally to the implementation of spiritual and cultural values and as a consequence, their impact on forest management practices remains unknown. Our study aims at providing insights into this matter.

Overarching systematic transdisciplinary approaches to assessing spiritual dimensions of forest management are rare and even more rarely are these approaches conceptually or theoretically robust. For example, spiritual values are included in Ecosystem Services theory which has been critiqued for its rational scientific bias and its inadequacy to capture spiritual values in a non-instrumentalist way (Cooper et al., 2016; Díaz et al., 2015; Govigli et al., 2021; Laband, 2013; Muradian, 2017). Alternatives have been proposed to overcome these shortcomings, such as biocultural diversity (Elands et al., 2015) and the IPBES approach for assessing ‘Nature’s contributions to People’ (Pascual et al., 2022). These conceptual approaches are valuable, but not suited to systematically identifying spiritual values and understanding their specific role in forest management as we do in this article.

In the Global South, the role of spiritual practices and beliefs of IPLC has been well-documented in Traditional Forest-Related Knowledge (Parrotta and Trosper, 2012) and collaborative and participatory forms of forest management (Bulkan, 2016; Gilmour, 2016; Razafindratsima et al., 2021; Wiersum and Sands, 2013). Most studies in the Global South emphasise the importance of addressing spiritual values for several reasons: a) spiritual values are inherent in people’s relationship with land, identity, and knowledge (Constant and Taylor, 2020); b) they potentially make management more effective in terms of enhanced products, services, well-being, or poverty relief (Jagger et al., 2022; Mavhura and Mushure, 2019); or c) they might prevent or mitigate potential or actual management conflicts arising from different worldviews (Allison, 2017; Rutte, 2011; Shanley et al., 2012). However, many studies are case-specific with limited validity and they often adopt a monodisciplinary ethnographic perspective. Most studies tend to pay more attention to spiritual and social patterns than to detailed forest management practices interacting with these patterns. Our approach combines forest management plan components and spiritual dimensions within one analytical system. Future studies in the South may benefit from this approach as well.

Research and guidance on the spiritual significance of nature in conservation management has recently consolidated its focus beyond the Global South and the role of Indigenous peoples to include religious

groups and the general public in the Global North (Verschuuren and Brown, 2019; Verschuuren et al., 2021). The work done so far signals a trend of spirituality emerging at the crossroads of several research lines in human-nature relations. First, the Global North has witnessed a growing public interest in spirituality in general, and a rise in “nature-based spiritualities” (Taylor et al., 2016: 340) in particular. Some research has been done into the public’s nature-related worldviews, spiritualities and practices (Hedlund-de Witt, 2011). In this line, whether and how spiritual traditions are intrinsically conducive to pro-conservation behaviour is subject to ongoing debate, although there seems to be some consensus about the positive contribution of Indigenous spiritualities and ‘nature-based’ spiritualities in this regard (Taylor et al., 2016). In the same vein, evidence is rising that spiritual experiences in nature enhance people’s connection to nature and, hence, pro-environmental behaviour (Frederickson and Anderson, 1999; Zylstra, 2019). While these theories need further testing in practice, our study inquires how these practices work in the specific case of forest management.

As forest managers in the North are faced with increasingly diverse societal demands including spiritual experience and enrichment (Torralba et al., 2020), forest management schemes respond by combining a traditionally technical/ecological focus with more people-oriented forest management approaches (Focacci et al., 2017; Miller and Nadeau, 2017). Forest managers encounter a growing and diversifying array of spiritual practices in nature, such as meditation retreats, ‘forest bathing’, and natural burial sites (Pedroli and During, 2019). During the 2020–21 COVID pandemic, the massive influx of visitors into forest areas underlined not only the importance of forests for physical, psychological and spiritual restoration (Pichlerová et al., 2021; Weinbrenner et al., 2021), but also the vulnerability of forests to human ignorance and misbehaviour (Van Duinhoven, 2020). Forest managers will need to be better equipped to deal with these different behaviours in their management. This requires capacity development based on recognising and understanding underlying worldviews and (spiritual) values. So far, this capacity has remained underdeveloped.

In sum, the significance of spiritual values for forest management in the Global North is still largely unknown (De Pater et al., 2008; Hammond and Judy, 1999). Understanding this significance enables us to ask questions about how spiritual values can or should influence forest management. The resulting insights will likely help make forest management more “effective, inclusive and equitable” (Brown and Verschuuren, 2019: 6) and, ultimately, more sustainable.

### 1.2. Research focus, objective and research questions

Forest management practices in the field are directed by policies at local, national, and global levels. The nexus between policies and practices are FMPs. The objective of this study is therefore to understand the significance of spiritual values in FMPs. FMPs have been defined (in Vellema and Maas, 2003:1) as “a description of decisions and activities to produce anticipated objectives with regard to use and conservation of forest in an area”. They are, for instance, required in global certification schemes that apply to all forest types worldwide (FSC, 2022; PEFC, 2018). FMPs vary widely in name, scope, scale, process, and planning approaches. They do not have a universal structure, but (they) usually contain three categories of information, hereafter termed ‘Components’: 1) the broader context and vision in which management is constructed from knowledge, policy discourses, and interactions with stakeholders, here labelled ‘Principles’; 2) objectives and directions derived from these principles, here labelled ‘Objectives’; and 3) prescriptions, measures and interventions to put the objectives into practice, here labelled ‘Operationalization’.

FMPs are informed by the perspectives of those involved (Van den Berg, 1999), who might in turn represent wider stakeholders’ (for example, tourists’) perspectives. Perspectives are value-laden, with these values also including spiritual values that may be represented in

various components of FMPs. They can be explicitly named and described, or implicitly embedded in texts using alternate wording. Investigating the significance of spiritual values as part of FMP components is therefore complex. It requires an understanding of spirituality and its significance in practice. Moreover, conscious deliberation of spiritual values in forest management is still in its infancy as theoretical foundation-building has hardly begun. In this study we apply the first conceptual framework to do this, developed by De Pater et al. (2021). It enables distinguishing different dimensions of spirituality and their systematic evaluation against an equally systemised set of FMP components and sub-components.

In the first place, the selection of suitable geographical locations of FMPs was informed by the above-mentioned insight that, unlike other spiritual traditions, Indigenous spiritualities and 'nature-based' spiritualities are conducive to sustainable behaviour (Taylor et al., 2016). We therefore focus on these spiritualities. Secondly, the locations would have to be covered by a sufficient number of accessible FMPs for our analysis. We found two geographical locations that met these criteria and had other advantages as well: 1) British Columbia (BC), Canada, where First Nations are gradually gaining back authority over land and forests (Smith, 2013); and 2) The Netherlands (NL), where nature-based spiritualities have gained some ground in society (Bernts and Berghuijs, 2016). An initial exploration of management plans from these areas also revealed that many BC plans showed explicit references to spirituality, whereas the NL plans showed few such references, which thus poses the challenge of finding implicit references to spirituality, if any.

The two locations differ in many respects. Forests in BC (predominantly coniferous) cover 57 million ha or 60% of the province's surface<sup>3</sup> while the Dutch forests only cover 364,000 ha or 11% of the country's land area covered with coniferous and deciduous forests (Schelhaas et al., 2022). In BC, logging, timber processing and exports are an important pillar of the province's economy<sup>4</sup> whereas the Netherlands depends heavily on imports as the Dutch only produce 8.5% of their timber consumption domestically (Oldenburger, 2019). In addition, population density in BC is extremely low (4.9 million inhabitants<sup>5</sup> on an area of 944,735 km<sup>26</sup>) while the Netherlands is among the world's most densely populated countries (17.8 million people on 33,839 km<sup>27</sup>). Other differences involve geography, climate, and history. However, there are similarities as well. Both locations are situated in the Global North and present an overall Western-style policy environment. Forestry in both locations has largely been regulated under 'scientific' models of management, which include formal planning by professionals. However, in both locations planning processes are gradually opening up to collaborative arrangements with other stakeholders and interested parties. First Nations have been increasingly involved in the establishment of Land and Resource Use Management Plans (Dale, 2013; Devisscher et al., 2021); in the Netherlands, the involvement of citizens in management planning and implementation is now common practice although their limited influence in forest governance has long been criticised (Buijs et al., 2011; Van Bommel et al., 2008; Wiersum and Van Vliet, 2002). By juxtaposing these two extremely different areas – in terms of forest cover, population density and diversity, urbanisation, and history – we could analyse how spirituality works in FMPs in both

settings and draw lessons from commonalities and differences between the two.

In order to reach our objective, i.e. to understand the presence, content and role of spiritual values in forest management plans in the Global North, this paper is guided by the following research questions:

- 1) How, if at all, are spiritual values represented in FMPs in BC and NL?
- 2) When present, what role do spiritual values play in the various components of FMPs in BC and NL? and
- 3) With respect to these two questions, how do the FMPs from BC and NL compare and what conclusions can be drawn from this comparison?

In the next sections, we concentrate on uncovering the types of spiritual values represented in the underlying principles and objectives of FMPs. We then analyse how spiritual values appear in the operational components of FMPs and draw conclusions from comparing spiritual values in FMPs between BC and NL. This leads to a discussion on three themes we elicited: nature experience, spiritual use, and history. Because this is the first time the conceptual framework has been applied to FMPs, we reflect on this conceptual model and the positionality of the researcher before drawing conclusions.

## 2. Methodology and methods

### 2.1. Methodology

The explorative character of the study justified a cross-sectional study design (Kumar, 2014) that combines qualitative and quantitative methods. Primary data were collected from FMPs through the application of a constructivist grounded theory approach (Chun Tie et al., 2019; Johnson, 2014). The constructivist perspective suits research on FMP texts, which are inevitably contingent on the researcher's perspective and interpretation. Often, FMPs do not explicitly mention spiritual values, although they do frequently contain value statements. We therefore not only examined explicit but also implicit references to spiritual dimensions, analogous to Jansen's tracing of "religious sub-texts" (Jansen, 2017:14, 180) in Dutch policy communication. As for analysis, methodical steps derived from grounded theory were applied (see 2.4), which allowed a systematic qualitative (and, partly, quantitative) interpretation and analysis of the data (Mills et al., 2017).

### 2.2. Conceptual framework

In order to investigate spiritual forest-based values, we applied the conceptual framework by De Pater et al. (2021), in which spiritual values are expressed in nine dimensions. Phenomena may express one, more, or all dimensions in different intensities. For this study we identified the following dimensions:

D0. Experiential-Unspecified (unspecified spiritual experience in nature).

D1. Experiential-Aesthetic dimension (experience of self-transcending awe and sublimity).

D2. Experiential-Relational dimension (deep connectedness with the forest, trees, or the land in general).

D3. Experiential-Restorative dimension (experience of refreshment and renewed energy).

D4. Experiential-'Life force' dimension (intuitive sensing of subtle, life/vital energies in forests, trees, or landscapes).

D5. Practical-ritual dimension (formal or less formal actions often aimed at 'developing spiritual awareness or ethical insight' in or for forests).

D6. Narrative-mythical dimension (vital stories – myths, legends, histories, oral or written, about creation, one's place on earth, saints and heroes, etc.)

<sup>3</sup> <https://www.theglobaleducationproject.org/earth/global-ecology/forests-of-british-columbia> retrieved/accessed on 29 November 2022.

<sup>4</sup> <https://www2.gov.bc.ca/gov/content/data/statistics/economy/bc-economic-accounts-gdp> retrieved/accessed on 29 November 2022.

<sup>5</sup> <https://www.canadapopulation.net/british-columbia-population/> retrieved/accessed on 29 November 2022.

<sup>6</sup> <https://www.worldatlas.com/maps/canada/british-columbia> retrieved/accessed on 29 November 2022.

<sup>7</sup> <https://www.worldatlas.com/maps/netherlands> retrieved/accessed on 29 November 2022.

**Table 1**  
Forest management plans sampled.

	Title/unit	Author/owner	Total area	Period/ remarks
<i>BC, Canada</i>				
B01	Xay Temíxw Land Use Plan 1st Draft 2001 (first phase)	Squamish Nation Land and Resource Committee	673,540 ha	n.a.
B02	Sea-to-Sky LRMP 2008	BC Min. of Agr. And Lands & First Nations	1,091,000 ha.	n.a.
B03	Great Bear Rainforest Order 2016	BC Province, Ministry of Forests, Lands and Natural Resource Operations	3,108,876 ha.	Till 31 March 2025
B04	Say Nuth Khaw Yum / Indian Arm Provincial Park Mgt. Plan 2010	Collaboration between TsleilWaututh Nation and Say Nuth Khaw Yum / Indian Arm Provincial Park Mgt. Board (BC Prov.)	6821 ha.	10–20 years
B05	Heiltsuk Land Use Plan Highlights, n.d.	Heiltsuk Tribal Council and Heiltsuk Yímas Council	n.a. (appr. 800,000 ha)	n.a.
B06	Lakes District LRMP 2000	BC Province, Lakes Resource Council (First Nations informed)	1,580,000 ha.	10 yrs.
B07	Peace Moberly Draft SRMP 2006	BC Province, Saúlteau First Nation, West Moberly First Nation	109,000 ha.	2000–2010
B08	Okanagan Sushwap LRMP 2001	>30 public and govt. participants. (First Nations informed).	2,500,000 ha.	n.a.
B09	Southern Rocky Mountain Mgt. Plan 2003	BC Min. of Sust. Res. Mgt. & stakeholders (Ktunaxa Nation informed)	362,819 ha	n.a.
B10	Cassiar-Iskut Stikine LRMP 2000	BC Province w. Planning Table including Tahltan Nation.	5,200,000 ha.	n.a.
<i>Netherlands</i>				
N01	Bosbeheerplan Gemeente Ede	Borgman Beheer, Gemeente Ede and 5 Working Groups	2461 ha	2010–2022
N02	Drentsche AA	Staatsbosbeheer	4523 ha	2018–2030
N03	Sallandse Heuvelrug	Staatsbosbeheer	2543 ha	2017–2029
N04	Drents-Friese Wold	Staatsbosbeheer	4736 ha	2016–2028
N05	Turfvaartse Landgoederen	Natuurmonumenten	764 ha	2015–2033
N06	Geleenbeekdal	Natuurmonumenten	285 ha	2016–2033
N07	Westerwolde	Staatsbosbeheer	2628 ha	2018–2030
N08	Kampina & Oisterwijk	Natuurmonumenten	2010 ha	2016–2033
N09	Laarbeek	Bosgroep Zuid-Nederland, Gemeente Laarbeek	185 ha	2016–2026
N10	Planken Wambuis	Natuurmonumenten	2284 ha	2008–2025

D7. Philosophical-ethical dimension (intellectual underpinning of experiences, rituals, narratives, and ensuing ethics and behaviour).

D8. Material-Spiritual dimension (physical phenomena with spiritual significance, here limited to movable items and buildings as, in fact, the whole landscape has a material dimension).

These dimensions represent the different types of spiritual values which we identified in the three components of FMPs: 1) Principles, 2) Objectives and 3) Operations. During the analysis, other units relevant to the analysis were identified inductively: attributes to the spiritual dimensions, clusters and major clusters of relevant concepts, and themes based on the major clusters. These are explained in Section 2.3. An explanation of terms is presented in Appendix 1, and all units are described in detail in Appendix 2.

### 2.3. Methods

Twenty FMPs were selected by cluster sampling (Kumar, 2014:240), ten plans in/for each study area. Criteria for selection in both areas were: ownership or tenure (in BC: First Nation tenure or involvement, in the Netherlands: an even spread across ownership, see below); a more or less recent time frame; a dominance of forests in the plans; and geographical coverage. A list of selected FMPs is presented in Table 1; for locations, see Figure 1 and 2. Considering that data saturation is not only dependent on sample size, but also on the depth of data (Fusch and Ness, 2015), data saturation was here reached when the researchers inter-subjectively agreed that adding additional plans for analysis would not yield any new insights as patterns started repeating themselves.

Plans in British Columbia were retrieved from various websites listing management plans for forests with some form of Aboriginal tenure or resource rights and were selected on the basis of an even distribution over the province's forest areas. Most forest management plans in BC have been published on the Internet, both by the Government of British Columbia and sometimes by First Nations. In the latter case, plan texts explained the process of establishment inputs by communities and referred to websites for implementation and progress. Some plans did not state an implementation period, but did foresee further phases in implementation or exploration, or prescribed adaptive management with corresponding monitoring structures. Many plans stated they would not hinder on-going treaty processes between First Nations and the BC Government.

In the Netherlands, FMPs were selected from Staatsbosbeheer and Natuurmonumenten, which own and manage the largest share of forests in the Netherlands. Additional plans came from forest-owning municipalities. Most plans have been published on the Internet but some were provided by the organisations.

### 2.4. Data analysis

We analysed the FMPs using Atlas.ti 9. We searched texts, tables and annexes for quotes, i.e., text fragments, illustrations, captions etc., and coded them in three rounds of initial, focused, and theoretical coding, respectively (Chun Tie et al., 2019).

First, coding was done deductively by looking for references to the above-mentioned spiritual dimensions and components of the FMPs. As we applied the codes, we kept in mind that: 1) for quotes to be labelled 'spiritual' their mere wording is often not sufficient; their context, too, is important. For example, beautiful scenery or outdoor recreation is not 'spiritual' per se, and not every individual's aesthetic experience is 'spiritual'. Such experiences cannot be steered. However, managers can increase the landscape's potential to evoke spiritual experiences, e.g., by enhancing its visual aesthetics, or by banning disturbances. In his thesis on "the sublime", Roncken (2018) distinguishes 6 levels, marking the highest two as 'spiritual'. We adopted his line of thinking in our coding approach. Likewise, for other dimensions of spirituality we also looked at text fragments near the quote in question. For instance, 'quality of life' as such is not necessarily 'spiritual', but when it is made to relate to 'community values' including 'sense of identity, place and spirituality', coding the quote as 'spiritual' is justified. For each code we noted our considerations, and assembled these in a codebook (Appendix 2).

An initial coding list was used to trace spiritual dimensions. Simultaneously, the FMP components were inductively searched for operational specifications, which were labelled as 'operational codes' when found. This round provided insight into the distribution of each dimension across all plans. In order to compare the locations, we used relative percentages. Correction for document length (numbers of pages) was done but proved not necessary as it yielded the same distribution pattern as uncorrected figures. The data furthermore provided an overview of co-occurrences between spiritual dimensions and management components for NL and BC (visualised in Fig. 4).

Secondly, focused coding was applied in two sub-rounds,



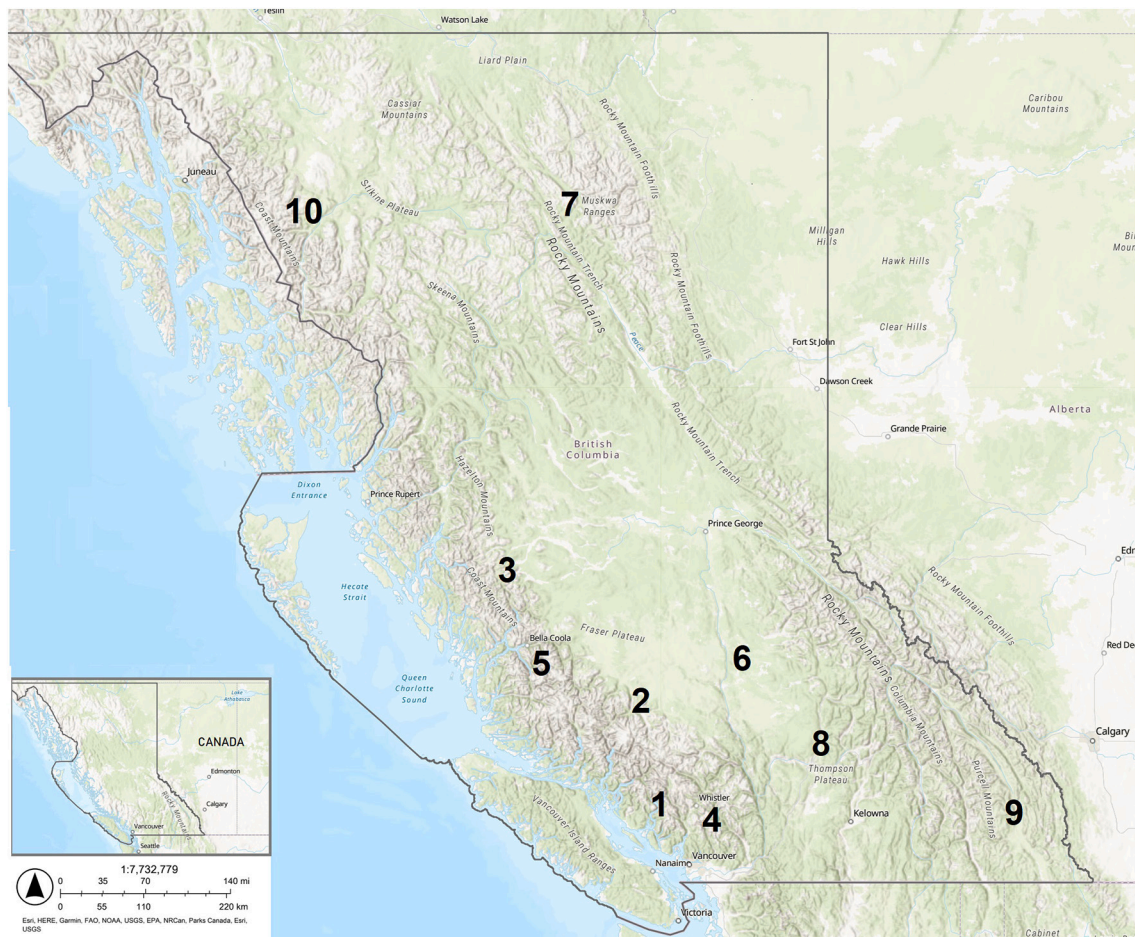


Fig. 1. Location of BC plans.

independently of the deductively derived coding in step 1. To start with, all texts were inductively searched for attributes of spiritual dimensions and their significance for the FMP components. This resulted in a set of 24 attributes specifying the nature or context of spiritual dimensions in the 20 plans (research question 2). Then, all quotes were examined again to elicit common clusters that linked dimensions, attributes and operational codes to the three components. This resulted in 17 clusters (element A in Fig. 5), which were combined into 9 major clusters, 3 for each component (see Fig. 5, element C).

Thirdly, integrative coding was applied in order to compare and explain the distribution of spiritual values in BC and NL, and thus answer the third research question. Three broad themes emerged from the co-occurrences of the clusters with spiritual dimensions: 'Nature experience'; 'Spiritual use'; and 'History' (see Fig. 5, element D). The themes are described in Section 3.2.

## 2.5. Reliability check

We mixed the list of documents from BC and NL in each round of coding and frequently compared codes in order to increase reliability. Where necessary, adjustments were made to the codes and explained in comments and memos (see previous paragraphs). An independent researcher carried out a reliability check by re-coding three pages each from ten plans randomly selected from the sample. The differences in interpretation were then discussed and adapted where necessary. The results showed 80% concurrence with the original coding, which was subsequently reviewed for consistency in order to increase reliability.

## 3. Results

In order to understand the presence, content and role of spiritual values in forest management plans, we analysed both the basic frequencies in which the nine dimensions occur in the plans and the frequencies in which the dimensions co-occur with one or more components of the plans. In both cases we found the same patterns of distribution, albeit with different numbers. The presence of spiritual dimensions is described in Section 3.1, and their role in FMP components is explained in Section 3.2. We then present the clusters and themes found in the second and third rounds of coding to elicit issues that could explain differences in forest spirituality between BC and NL (Section 3.3).

### 3.1. Presence of spiritual values

Spiritual dimensions were found to be widely present in all FMPs; however, their spread over the different dimensions and plans varies greatly. The NL plans are more concentrated on the *Experiential* and *Mythical-Narrative* dimensions than the BC plans while the latter show a broader spread over the nine dimensions.

A total of 1434 codes for spiritual dimensions were found across all FMPs. Fig. 3 shows the percentages of the spiritual dimensions within each location and in total. More data are presented in Appendix 3. The *Experiential-Aesthetical* (D1) dimension is strongest of all (24%). Five other dimensions score medium high: the *Experiential-Unspecified* (D0), *Experiential-Relational* (D2), *Practical-Ritual* (D5), *Mythical-Narrative* (D6), and *Philosophical-Ethical* (D7) dimensions (11%–15%). Lastly, three dimensions show low frequencies: the *Experiential-Restorative*



Fig. 2. Location of NL plans.

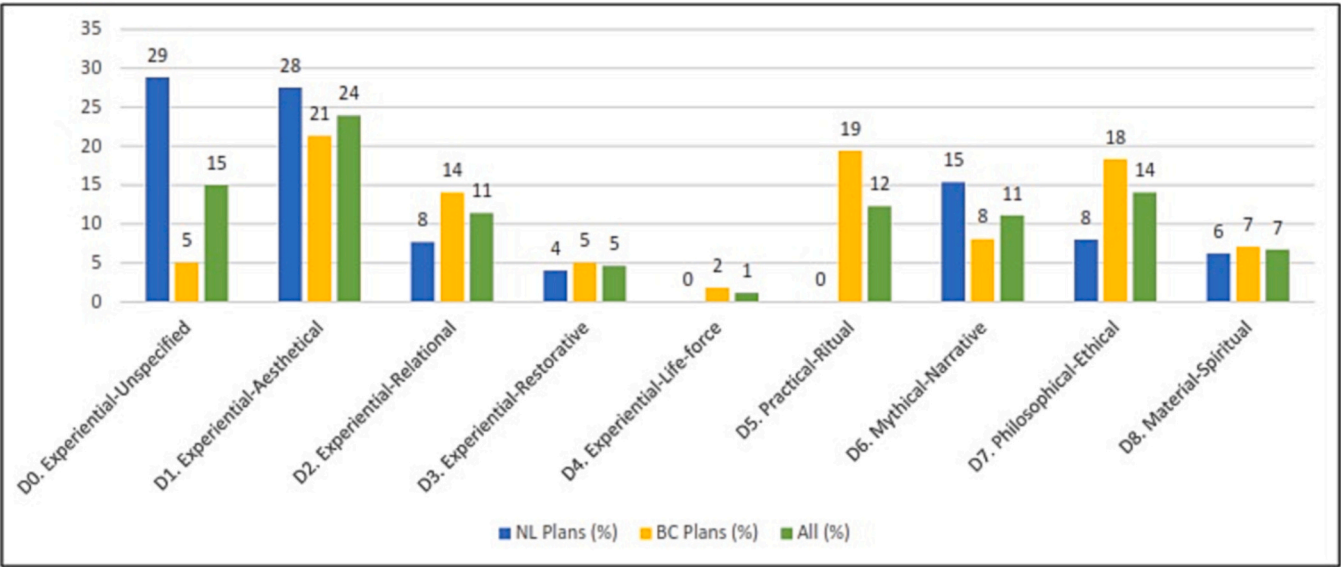


Fig. 3. Distribution of spiritual dimensions over both locations and all plans together (% , N = 1434).



**Table 2**Number and percentages of coded spiritual dimensions per FMP component, i.e. co-occurrences ( $N = 2465$ ).

	FMP component							
	N (absolute number)				Relative % of each spiritual dimension			Overall % of each spiritual dimension
	Princi-ples	Objec-tives	Operations		Princi-ples	Objec-tives	Operations	
Spiritual dimension	C1	C2	C3	Total	C1	C2	C3	
D0 Experiential-Unspecified	74	83	235	392	19	21	60	16
D1 Experiential-Aesthetical	125	101	321	547	23	18	59	22
D2 Experiential Relational	116	99	92	307	38	32	30	12
D3 Experiential-Restorative	17	59	53	129	13	46	41	5
D4 Experiential-Life-Force	13	6	7	26	50	23	27	1
D5 Practical-Ritual	58	127	146	331	18	38	44	13
D6 Myth-Narrative	90	81	83	254	35	32	33	10
D7 Philosophical -Ethical	124	78	127	329	38	24	39	13
D8 Mat.-Spiritual	35	52	63	150	23	35	42	6
Total all plans	652	686	1127	2465	26	28	46	100
Total BC	410	406	674	1490	28	27	45	100
Total NL	242	280	453	975	25	29	46	100

(D3), *Experiential-Life force* (D4), and *Spiritual-Material* (D8) dimensions (1–7%).

BC takes up 58% of all codes, with NL accounting for 42%. All dimensions except D0, D1 and D6 have higher frequencies in the BC plans than in the NL plans. D0 and D1 reflect references to ‘nature experience’ or unspecified ‘spiritual experience’, which occur more often in the NL plans than in the BC plans. The higher frequency of the *Mythical-Narrative* dimension (D6) in the NL plans can be attributed to the frequent descriptions of the area’s history and related cultural-spiritual values in these plans.

### 3.2. Role of spiritual values

Almost half of all spiritual dimensions are expressed in Component 3 of the plans, Operationalisation, while the other half are expressed in both Principles and Objectives, at a quarter of all dimensions each. This means that many spiritual values are linked to measures and interventions in the plans, and therefore have some potential bearing on the implementation of forest management. However, the distribution of the various dimensions over the components differs widely between BC and NL.

The role of spiritual values in FMPs was analysed by counting and interpreting the co-occurrences of spiritual dimensions with the three components of the FMPs: Principles (C1), Objectives (C2) and Operations (C3). Overall, Table 2 shows that spiritual dimensions are almost equally expressed in both Principles and Objectives (26% and 28%, resp.) and that the majority is expressed in Operations (46%). Some spiritual dimensions occur more prominently than others. FMP Principles (C1) are dominated by the *Experiential-Relational* (D3) and the *Philosophical-Ethical* (D7) dimensions while the Objectives (C2) are dominated by the *Practical-Ritual* (D5) dimension, and the Operations (C3) are dominated by the *Experiential-Aesthetical* (D1) and *Experiential-Unspecified* (D0) dimensions.

The *Experiential-Aesthetic* (D1) and *Experiential-Unspecified* (D0) dimensions score strongest over-all. They score especially strongly in Operations (C3), and they also score relatively highly in Principles (C1) and Objectives (C2) in the NL plans but not in the BC plans. Both dimensions are tightly linked to each other content-wise. Interventions to promote nature tourism and thus enhance visitors’ experiences in nature (unspecified or aesthetic) are frequently mentioned in these parts of the plans. Particularly the visual quality of the landscape is often addressed: “*Within these scenic areas, emphasis will be placed on maintaining the aesthetic values to support recreation, tourism and a quality of life.*” (B10/18:60). Some plans emphasise the area’s ‘wilderness’: “*The following area-specific direction applies: Maintain the remote and wild character and opportunities for a cultural experience*” (B02/2:101). Zoning is frequently applied, as this example shows: “*To retain the remote character of the*

*[Wildland] Zone and associated high quality of wilderness experience for First Nations cultural uses and commercial and non-commercial backcountry recreation.*” (B02/2:88). Other measures include regulating extractive industries to minimise impact on visual quality, protection, and responsible use of forests. Communication and education are also deployed to facilitate the experience of nature, especially for young persons: “*SBB intends to make nature attractive for more children to encounter and play outdoors. We invite children to experience the feeling of freedom and adventure, to enjoy themselves, to move and discover. Thereby we choose an approach through heart (experience), head and hands*” (N03/10:25).

The *Experiential-Relational* (D2), *Practical-Ritual* (D5), *Mythical-Narrative* (D6), and *Philosophical-Ethical* (D7) dimensions all show medium overall scores. They are more or less equally expressed in each of the FMP components; their overall contribution to the total of the components varies greatly, though, as their absolute numbers diverge markedly. Each of these dimensions also shows quite different scores for the two locations.

The *Practical-Ritual* (D5) dimension scores highest of all (together with D1) in the BC plans, while it is extremely low in the NL plans. This dimension is strongly expressed in the Operations (C3) and Objectives (C2) components, and, more weakly, in the Principles component (C1). In the Operations component, it is often linked to protection in BC: “*Within Conservancies .... The primary ... intent is the maintenance of social, ceremonial, and cultural uses by First Nations, the protection and enhancement of cultural and heritage resources to enable the expression of a connection to the land*” (B02/2:108).

The *Experiential-Relational* (D3) and *Philosophical-Ethical* (D7) dimensions are similar in overall scores, with slight variations. D3 is strongest in the Principles (C1) component and weakest in Operations (C3), while D7 is strongest in Operations (C3), less strong in Principles (C1) and rather low in Objectives (C2). These two dimensions score highly in the BC plans but low in the NL plans. To quote an example of D3: “*The Park... also contains sensitive cultural heritage resources with deep connections and significance to the Tsleil-Waututh Nation,*” (B04/4:25); and an example of D7: “*Gv’íl’ás is a set of customary laws that governs the overarching system of the Heiltsuk. The word 7áxvái translates as the ‘power’ or ‘authority’ people derive from their ownership of and connection to the land. It is a complex and comprehensive system that embodies values, beliefs, teachings, principles, practices and consequences*” (B05/5:12).

The *Mythical-Narrative* (D6) dimension is evenly distributed over the three components. It scores third highest in the NL plans but sixth in the BC plans. This is a typical example of D6: “*Visitors need explanation/education. When people get to understand what they see, for example through a signboard or a story by an excursion guide, experience becomes more intense*” (N01/6:42).

The *Experiential-Restorative* (D3), *Experiential-Life force* (D4), and

*Spiritual-Material (D8)* dimensions show low scores with all components, too low to assess co-occurrence with any of the FMP components, or differences between BC and NL. The following quote refers to D3 and D4: “I need to be in the wilderness to gain the spiritual strength for my work. You need to be at a place where nobody has been, a place that is your own....” (B01/1:66). An example of D8 is: “cutting selected trees for ceremonial or artistic purposes” (B01/1:215).

### 3.3. Clusters and themes of spiritual dimensions

The themes emerging from the last round of compilation and their co-occurrences with spiritual dimensions (see 2.4) are presented in Fig. 5. Due to a lack of space here, the description of these themes and underlying attributes is presented in Appendix 2. However, they are reflected in the final compilation in three themes labelled ‘Nature Experience’, ‘Spiritual Use’, and ‘History’. The themes are detailed below.

#### 3.3.1. Nature experience

‘Nature experience’ as a theme refers to the many operational sections of FMPs that discuss nature and ‘wilderness’ tourism, communication, education, zoning, and scenic landscapes; in consequence, they frequently show references to spiritual dimensions - especially the *Experiential-Unspecified (D0)* and *Experiential-Aesthetical (D1)*, and, to a lesser extent, *Experiential-Relational (D2)* dimensions. The theme appears strongly in both BC and NL. To quote a BC plan: “At Bishop Creek, moorage, overnight camping, hiking trails and other day-uses would be augmented by a Tsleil-Waututh Replica Coast Salish Village providing visitors with a cultural experience ....” (B04/4:72).

Scenic landscapes and ‘wilderness’ are strongly emphasised in plans for both locations. BC plans prescribe their maintenance and protection not only for tourism development, but also for “quality of life.” (B10/18:60). The NL plans actively seek to restore degraded scenic landscapes: “we want to give space for several firs to grow impressively high and thick. Of course, we maintain the old, monumental Scots pines in the ... forests because of their high experiential values” (N08:22:42).

Several NL plans aim to perpetuate the ‘wilderness’ character of the area to enhance not only biodiversity values but also nature experiences. Some plans prescribe zero interference, other plans foresee active interventions to this end, even to the point of deploying machines to restore biodiversity and “savage beauty”, as the title of one plan has it (N10).

Measures like protection and responsible use are not strongly linked with experiential values in the NL plans, while they are in the BC plans, as this quote testifies: “protected areas planning to ensure conservation of identified values both within and adjacent to protected areas, as well as sustainable tourism, recreation and traditional use of protected areas;” (B06/14:102). On the other hand, many NL plans discuss the rationale of enhancing visitors’ nature experiences for conservation purposes and overcoming impediments to this goal. For example: “Nature conservation starts with nature experience; therefore, Natuurmonumenten considers it highly important that people themselves experience wonder and fascination for the landscape, nature and our rich cultural history. We want to ... co-operate to enhance the experience of nature” (N06/13:50).

#### 3.3.2. Spiritual use

The theme of ‘Spiritual Use’ comprises 1) ‘connection with land’ as principle and moral consideration; 2) directions to realise this connection through traditional knowledge and practices; and 3) prescriptions and measures to use the land wisely. This theme is mainly manifest in BC, but not in NL. The BC plans show a strong emergence of the *Practical-Ritual (D5)*, *Philosophical-Ethical (D7)*, *Experiential-Relational (D2)*, *Mythical-Narrative (D6)*, and *Material-Spiritual (D8)* dimensions in this theme. These dimensions are well elaborated in the plans’ principles and objectives, but are somewhat less elaborately articulated in operationalisation. Specifically, the above-mentioned dimensions emerge in: 1) descriptions of First Nations’ and settlers’ ancient ties with the land:

“Our relationship to this land is ancient, complex and sacred” (B05/5:2); 2) objectives to restore and enhance connections with the land, the land’s healing potential, traditional land use, and holistic ways of living, as this quote illustrates: “[t]o protect and enhance opportunities for First Nations cultural education as it relates to the land and natural resources” (B02/2:35); and 3) interventions like zoning, protection, responsible use, and youth and adult education to operationalise these objectives. For example, one plan prescribed the zoning of Wild Spirit Areas (WSPs), which would “be maintained in their natural state while allowing for a full range of traditional cultural, spiritual and other compatible uses. Through the establishment of WSPs, the Nation will provide for the continuity of the community’s cultural connection to the land, while allowing for their use and enjoyment by visitors who respect and honor these areas.” (B01/1:211).

#### 3.3.3. History

The ‘History’ theme comprises references to spirituality in texts about historical roots, historical awareness, and history education, which are frequently linked to the *Mythical-Narrative (D6)* dimension. The theme is present in both BC and NL plans, albeit in different ways. In the BC plans, the *Mythical-Narrative* dimension often goes together with the *Experiential-Relational (D2)*, *Practical-Ritual (D5)*, and *Philosophical-Ethical (D7)* dimensions. Many BC plans quote First Nations’ historical arguments to stress their ancient ties with the land. For example, according to the Squamish Nation, “the significance of the land extends beyond the archaeological sites ... The whole traditional territory holds a legacy of language, tradition, legend, spirituality and use that closely links the people to their territory” (B01/1:45). However, these linkages only appear in Component 1, Principles, and they are hardly reflected in Operations (C3).

In the NL plans, history is almost exclusively linked to the *Mythical-Narrative* dimension, which emerged as the overall third strongest dimension in the NL plans. Here, too, historical awareness is emphasised in the Principles component, but it is also present in Objectives and, to some extent, in Operations. Many NL plans emphasise the importance of connecting people to nature (*Experiential-Relational* dimension, D2) through historical awareness-raising through communication and education: “The forests ... are rich in elements of cultural history. From sheep-folds to hedgerows, the landscape reflects history to an important degree. It is indicated that only few visitors are knowledgeable about that past .... By pointing people’s attention to this cultural history, the landscape can be better understood and experienced” (N06/6:26).

## 4. Discussion

In this section we reflect on the results. Section 4.1 discusses the overall findings in the light of the research questions. In Section 4.2 we reflect more deeply on the three resulting themes and how they compare with existing literature. Finally, we discuss the merits and limits of the conceptual framework, methodology and methods applied in this research (Section 4.3).

### 4.1. Reflection on the findings in relation to the research questions

The aim of this study was to elicit the presence, content and role of spiritual values in forest management plans in BC and NL. We first discuss the presence of spiritual values in FMPs (Research Question 1), and then address the role spiritual values play in the various components of FMPs (Research Question 2). As similarities and differences between the plans from British Columbia and the Netherlands surfaced from the start, we discuss these simultaneously in these two paragraphs. (Research Question 3). We continue this comparison in Section 4.2.

Our results show that a variety of spiritual values is present throughout the plans. However, the ‘dimensions’ of spirituality present themselves differently in the two locations. In general, the BC plans show a broader spread of dimensions than do the NL plans; the former addressed experiential as well as practical-ritual and philosophical-



ethical dimensions, while the latter appeared to concentrate on the experiential and mythical-narrative dimensions of spirituality. It is not surprising that experience features strongly in both locations, as scenic beauty and tourism are important in both plan sets, albeit in different landscapes and on different scales. The larger spread over the other dimensions in BC may be attributed to the many texts that reflect First Nations' worldviews on, for instance, spiritual relationship with the land, maintenance and revival of cultural and ceremonial practices, and philosophical-ethical underpinnings of responsible use. Similar 'eco-spiritual' worldviews exist in NL (and among non-Indigenous inhabitants in BC for that matter) but were not expressed significantly in Dutch FMPs, although several plans mention the involvement of residents and other stakeholders in the planning process.

The role of spiritual values is most manifest in the operational components of the plans, which cover half of all references to spirituality in the texts. It is therefore clear that the requirements to address spiritual values in the global forest-related policy documents have been operationalised to a considerable extent at the more concrete planning levels. The spread of the different spiritual dimensions over the components shows largely the same variation as above, and can be explained by the same reasons. This implies that an analysis of such initiatives may contribute to making global forest-related policies better equipped to provide advice on management implementation and guidance.

Our analysis may not have revealed the whole range of spiritual dimensions. In particular, the *Experiential-Life force* dimension (D4) was hardly represented in the plans. This dimension refers to the 'energy' or 'power' inherent in land and life forms that can only be intuited by subjective experience; (Ivakhiv, 2005) describes its many global manifestations as 'Earth mysteries'. Only three BC plans (B01, B04, and B05) refer to this dimension in a total of a mere 15 quotes, the majority of which from illustrative interviews with First Nations members. References to D4 are completely absent in the NL plans. However, we know from informal sources that at least three of the NL plan areas (N02, N03, and N08) were treated by 'energetical healing' (ECOintention, n.d.; Van den Brand, 2011). Apparently, references to 'life force' were not considered suitable or important in 'science-based' forest management plans.

#### 4.2. Reflection on the themes in the light of literature

We discuss the three themes described in 3.3, as they encompass the underlying clusters, dimensions and components. As for Theme 1, our findings about spiritual experience in nature concur with Heintzman's (2011) empirical findings that "naturalness of wilderness" (2011:91), solitude, nature-based recreation and education are conducive to visitors' spiritual experiences and could therefore be encouraged through forest management. In Europe, Torralba et al. (2020) confirmed that there is indeed potential for expanding forest visitors' "spiritual enrichment" among other cultural ecosystems services such as "bird/nature watching, aesthetic appreciation, artistic activities and outdoor recreation" (2020:7). The fact that spiritual enrichment can be facilitated by straightforward measures such as enabling access, clearing sightlines, and enriching forest structure may explain the high presence of the *Experiential-aesthetical* and *Experiential-Unspecified* dimensions in Operations (C3). In addition, government regulations to stimulate the maintenance of scenic landscapes may also be an explaining factor in BC. As for the Netherlands, the efforts to maintain and even 'develop' 'wilderness' for conservation purposes is also a response to, among others, the public's increasing demand for nature experiences, as we saw. Therefore, in this densely populated country with no undisturbed nature left, even man-made 'wilderness' landscapes may contribute to a fulfilment of spiritual needs (Wolf, 2012).

'Spiritual use' (Theme 2) is well articulated in the Principles and Objectives categories of the BC plans, but occurs less frequently in Operations (C3), with the exception of zoning and protection. An explanation might be that it is more difficult to make 'the spiritual' explicit in

operations like responsible harvesting, hunting, and gathering than in experience-facilitating measures such as nature tourism. Spiritual dimensions can be attached to 'ceremonial use', but when are harvesting and hunting spiritually inspired? 'Spiritual use' refers to deeper-seated domains in the human spirit – such as worldviews and ontologies – which imbue and inform our interactions with physical reality. William James (2002 [1902]: 380–81) described this 'informing' as the 'noetic quality' of mystical experience: "... mystical states seem to those who experience them to be also states of knowledge. They are states of insight into depths of truth unplumbed by the discursive intellect. They are illuminations, revelations, full of significance and importance, all inarticulate though they remain; and as a rule, they carry with them a curious sense of authority for after-time". Therefore, while the mystical revelations are, in James' words, 'inarticulate', they do give authoritative insights, through myths, songs, and many other ways in which traditional knowledge is articulated (Berkes, 2012; Stevenson, 2013).

As for 'History' (Theme 3), this theme is frequently deployed to connect people with nature in the NL plans; operationalisation appears to be problematic in BC plans, however, although the theme is frequently mentioned in the other components. This apparent imbalance can be explained by the historical context of the BC plans. Most BC plans were established in the early parts of this millennium, in the aftermath of vehement forestry-related conflicts compounded by land rights and conservation struggles, and a colonial history that left First Nations despoiled and traumatised. The plans were the outcomes of the Land Resource Management Planning (LRMP) approach that was adopted in the mid-1990s as a way to solve this "war on the woods" (Dale, 2013:225) by modern conflict resolution methods. First Nations' participation varied from absence in the process to participation in, or even full ownership of, the plans; their interests were anyway reflected in the plans, if only because planning regulations prescribe their participation (Dale, 2013; Saarikoski et al., 2013). However, in this sensitive context a stepwise approach was understandable, e.g., through zoning and deferring detailed decisions to lower-scale planning. The historical context may also explain why First Nations' aims to reconnect with land are frequently mentioned in the Objectives components, but mythical-historical connections hardly occur in Operations components of BC plans. History is still alive, according to Mercredi and Turpel (1993:13–14, in Dale, 2013:216): "It is important for First Nations to tell their stories ... For First Nations peoples, history defines the present; it is not something to be set aside for a better tomorrow ... history keeps coming up and will probably always do so". This painful history may render Native collaborators hesitant about operational decisions. A second explanation may be that First Nations' conceptualisations of 'cultural heritage' are broader than what is covered by governmental legislation (Mason, 2013) and are thus only partly represented in operational texts. Thirdly, narratives may actually have been addressed, but not formulated as such in educational and cultural programmes in the plans and were therefore not detectable (see Artelle et al. (2018) for a similar argument).

#### 4.3. Reflection on conceptual and methodological approach

We discuss strengths and weaknesses of the conceptual approach, data selection, analysis, and validity. The conceptual framework (De Pater et al., 2021) proved to be suitable for investigating spiritual significance in forest management plans. Its wider applicability in forest management practices and forest managers' experiences has not yet been assessed. So far, the framework has proved to require some familiarising for those not versed in the original 'seven dimensions of religion' (Smart, 2002). This capacity is a precondition for the framework's replicability.

Another question is whether our implementation of the framework has inadvertently been biased towards Indigenous or non-Indigenous spiritual insights. Studies and practices that do address Indigenous spiritualities in management or policy-making often 'integrate' Indigenous spiritualities into rational scientific approaches, which is

increasingly recognised as a form of disembodiment of knowledge, or cooptation (Latulippe and Klenk, 2022; Htoo et al., 2022). The framework was designed to treat all spiritualities equally, as it was based on Smart's original work aimed at casting off Eurocentric biases in religious scholarship (Smart, 1996; Von Stuckrad, 2003). The forest management we examined with the framework are definitely rational-scientific (see above); however, we studied them not to elicit Indigenous spiritualities as such (that would require a quite different approach) but to see how spiritual values – indigenous or not – emerged in the plans. While interpreting the texts we realised that many references to Indigenous spirituality are secondary, in the sense that they had to be formulated in the more or less 'technical' language of the management plans, and that Indigenous writers or collaborators of the plans were not always willing to reveal all their knowledge and insights (Mason, 2013; Lewis and Sheppard, 2013).

As for data selection, we should ask ourselves in hindsight whether the plans from BC and NL adequately represented the two 'nature-friendly' spiritualities that served as a basis for selection of these locations: Indigenous, and 'nature-based' spiritualities respectively. To answer this question, we first need to know how stakeholders adopting different perspectives could influence the plans. As discussed in 4.3, the BC plans resulted from intensive consultation processes in which First Nations had a distinctive though varying part; in our study we found many references to Indigenous spirituality indeed (and to non-Indigenous spiritualities, too, e.g., in nature experience). However, we also noted above that the technical structure of the FMPs may hamper representation of Indigenous spirituality, and that other forms of management appear to be more adequate. As for NL, plans are usually professional deskwork, often drawn up after interaction with stakeholders and the public. Whether and how 'nature-based' spiritualities find their way into these plans is unknown. Hardly any plans mention spirituality explicitly, not even where we know that it played a role. This is in contrast with reports from society about upcoming 'nature-based spirituality' (Hedlund-de Witt, 2011). Apparently, forest professionals are still reluctant to speak openly about spirituality (De Pater et al., 2008; Terhaar, 2005), although they do express their spiritual concerns in individual conversations. Perhaps the increased public attention for nature and its healing potential during the COVID-19 pandemic (Rousseau and Deschacht, 2020) might reduce this reluctance. Research beyond FMPs is needed to answer the question; here the two spiritualities were only the basis for selection, not the main object of research.

As for data analysis, reading and interpreting texts is subjective and therefore requires reflection on the position of the researcher in the process. As Dutch researchers with multi-cultural work experience, we were careful to recognize our biases and bracket them to avoid undue judgments in interpreting the texts. More so than with the BC plans, interpretation was a challenge with the NL plans since spiritual values were often implicitly indicated in these plans. Other than in interviews, interpretations could not be verified by feedback from partners (Kumar, 2014). Therefore, interpretations were checked against our own work, to yield grounded results. Despite our best efforts, we cannot completely rule out the 'grey area' of subjectivity that remains.

As for validity, by selecting plans from two research areas with highly diverging geographical and social conditions we hoped to find results that would have some validity for the range of conditions in between. For example, since the *Experiential-Aesthetical* dimension features strongly in nature tourism at both locations, we might expect the same elsewhere. Validity, however, cannot be guaranteed in view of the qualitative nature of our research. Instead, we did everything possible to ensure its transferability – or external validity, according to Kumar (2014) – by thoroughly documenting all parts of the research process.

## 5. Conclusions

This study is the first interdisciplinary classification of spiritual values in forest management based on the conceptual framework

published by De Pater et al. (2021). It was applied to forest management activities as prescribed in forest management plans in BC and NL. This study demonstrates that spiritual values are present in FMPs in both BC and NL, not only in abstract principles or objectives, but also in their concrete implementation. While we cannot say unequivocally that the operationalisation of spiritual dimensions in the FMPs benefited from global policy processes, we suggest that a closer analysis of FMPs might contribute to making these policies better equipped to support the spiritual dimensions of forests in management implementation. However, the extent to which spiritual dimensions are addressed differs per theme and location. An examination of these differences has yielded the following insights:

Firstly, 'Nature experience', especially in scenic landscapes and 'wilderness', is the most important theme addressed and operationalised in both locations. This corroborates existing literature that demonstrates the potential of forests and nature for spiritual experiences – aesthetic or otherwise – which may possibly induce environmental behaviour or lifestyle (Garfield et al., 2014; Zylstra et al., 2014). As this theme was found in two very different countries – predominantly 'natural' versus predominantly 'urban' – we may deduce that this potential is a widespread phenomenon in the Global North.

Secondly, the theme 'Spiritual use' was found in British Columbia, where long-nurtured relations with land, moral considerations, and spiritually motivated practices are important drivers for a wise use of the forest. This leads to the conclusion that not only *experiential* dimensions of spirituality are conducive to environmental behaviour; rather, practical-ritual, philosophical-ethical or even material spiritual dimensions can play that role as well. These dimensions evoke spiritual significance to *action* – in this case, the *use* of the forest which should be made wisely. In other words, it is not only a sublime landscape that can inspire 'green' behaviour; berry-picking, tree cutting or hunting can also be spiritually imbued. This finding corresponds with the holistic views on nature published by Indigenous scholars (Kimmerer, 2013; Yunkaporta, 2020).

Thirdly, we also saw that the theme 'Spiritual use' appeared most often in the 'Principles' and 'Objectives' components and not so frequently in the operationalisation components of the plans. This supports observations by Lewis and Sheppard (2013) and Mason (2013) that the 'technical' language and regulations constituting most forest management plans provide an impediment to eliciting spiritual values in 'wise use' of forest. Many BC plans in this study are indeed 'technically' structured and may have lacked room to operationalise spiritually inspired principles and objectives. Other forms of management seem to be better suited to accommodate 'Spiritual use', such as co-management, adaptive management, ecosystem-based management (Tiakiwai et al., 2017; Worboys et al., 2015), and what Artelle et al. (2018) call 'values-led management'. While our study has put the spotlight on the North and was, as a consequence based on the 'Western' management planning approach, the results did reveal limitations of FMPs as instruments for open dialogue between multiple agents with different worldviews. Our study thereby supports the search for new and more inclusive and holistic approaches to forest management planning, also in the Global North (Konijnendijk, 2018; Macqueen, 2005).

Fourthly, the theme 'History' appeared in different ways in BC and NL. Whereas in the NL history was mobilised in communication and storytelling as a way to connect visitors with land and nature, such action was problematic in BC plans, where the painful past still continues into the present. In other words: the link between two types of spirituality, the Mythical-Narrative and the Experiential-Relational dimensions, is not always a positive or stimulating one for those concerned. This brings us to the debate on relational values which have gained ground in underpinning policies on biodiversity conservation and on balancing Earth stewardship with good quality of life (Chan et al., 2016; IPBES 2022). If history is experienced as traumatic, and if it is associated with violation of people's relation to land, then the relation with land, and perhaps land itself, is corrupted and in need of healing.

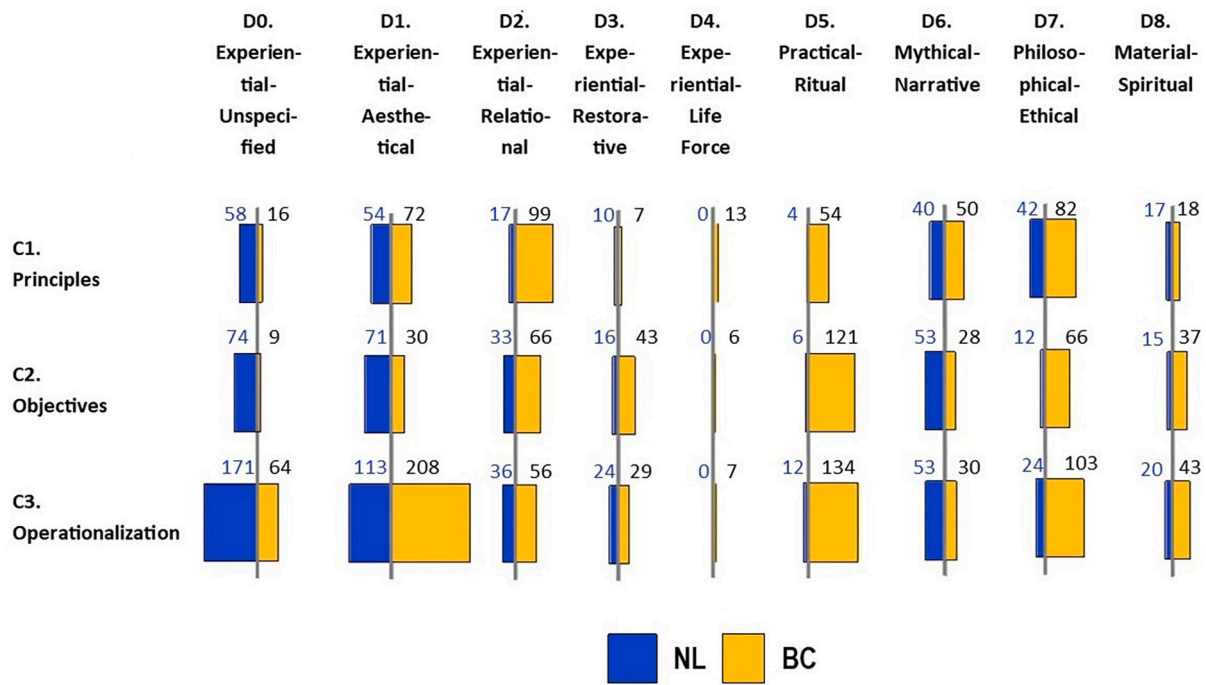


Fig. 4. Significant co-occurrences of Spiritual Dimensions with Components (in numbers per location).

This ‘dark side of spirituality’ (De Souza, 2012) should be kept in mind in further research on relational values in human-nature relationships.

Fifthly, we should be reminded that the plans were selected in a context of emerging Indigenous and ‘nature-based’ spiritualities. Comparison of the two plan groups shows that spiritual dimensions are applicable to both spiritualities, with diverging results but also similarities. The representation of spiritual values in the BC plans in which First Nations were involved confirms our initial observation that Indigenous peoples’ organisations have been successful in their striving for the incorporation of spiritual values into forest management. The emergence of spiritual values in the NL plans – in a largely forest-poor urban setting – contrasts with long-held perceptions in international policy and research fora that cultural and spiritual values are

predominantly the domain of Indigenous peoples and local rural communities in the Global South (Elands et al., 2015). Our findings support the increasing understanding that cultural and spiritual values for conservation and management are universally important, also for the global North (Verschuuren et al., 2021).

Finally, we observed above that in research on spiritual values of forests, the perspectives of forest managers have remained under-researched. This study sheds some light on forest managers’ perspectives, insofar as these perspectives are represented in forest management plans. However, forest management plans are typically shaped by multiple perspectives, and may not always match with the on-the-ground reality. Coping with this reality involves, among other things, managers’ spiritual concerns (De Pater et al., 2008), but little is known

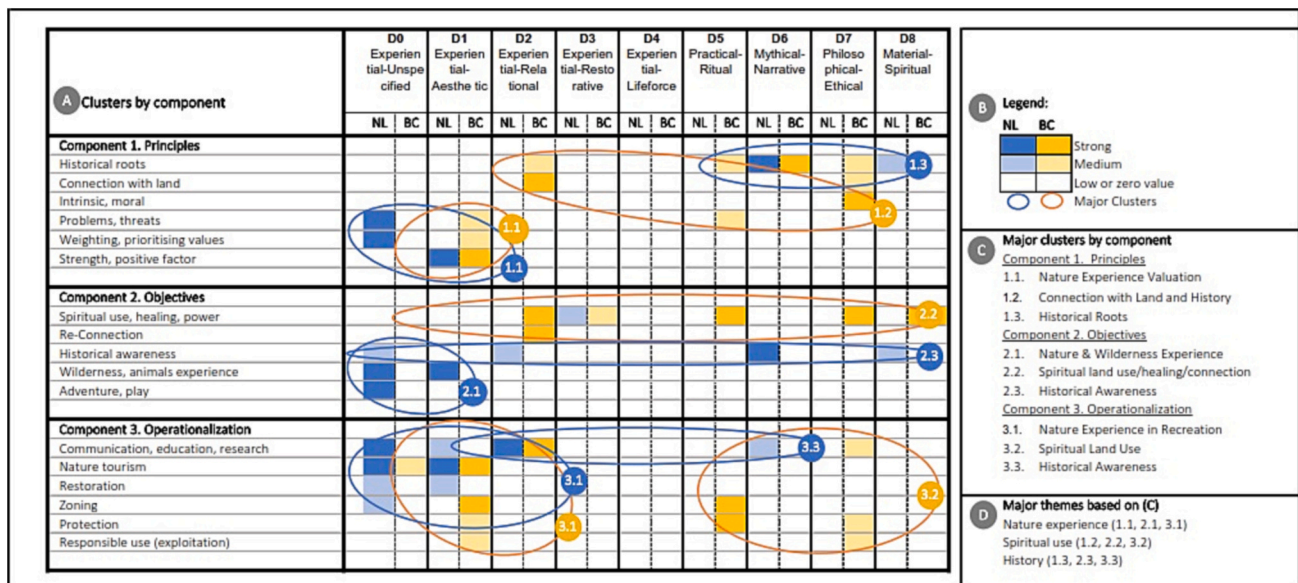


Fig. 5. Relations between spiritual dimensions, forest management plan components, recurring clusters (A), major clusters (C), and major themes (D) in both plan locations. The coloured cells (B) represent co-occurrence of clusters and spiritual dimensions. For explanation see Section 2.4.



about those concerns. Additional research is therefore anticipated into the significance of spiritual values in forest managers' field-level practices and how this might contribute to higher-level policy support.

### CRedit authorship contribution statement

**Catharina de Pater:** Conceptualization, Methodology, Investigation, Data curation, Writing – original draft, Writing – review & editing, Validation, Visualization, Project administration. **Bas Verschuuren:** Supervision, Conceptualization, Resources, Writing – review & editing, Visualization. **Birgit Elands:** Supervision, Conceptualization, Methodology, Investigation, Resources, Writing – review & editing. **Iris Van Hal:** Resources, Methodology, Validation, Visualization. **Esther Turnhout:** Supervision, Conceptualization, Resources, Writing – review & editing.

### 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. This research was self-funded.

### Data availability

I have shared the link to my data/code at the 'Attach file' step [Dataset Spiritual Values in Forest Management Plans \(Original data\)](#) (Mendeley Data)

### Acknowledgements

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## Appendix A. Explanation of terms

Dimension (of spirituality)	Characteristic of a spiritual phenomenon of a specific nature that cannot be reduced to other characteristics. This application of the term 'dimension' is theorised by Smart (1996, 2002) who applied it to 'religion'. Smart distinguishes seven 'dimensions of religion'. Based on this, De Pater et al. (2021) designed a conceptual framework for analysing nature-based spirituality with 7 dimensions, which in a slightly adapted version was deployed in this study.
Component	Category of information in a forest management plan. We distinguish 3 components:
Operational Code ('Op. code')	1. 'Principles': the broader context and vision in which management is constructed from knowledge, policy discourses, and interactions with stakeholders; 2. 'Objectives': objectives and directions derived from these principles; and 3. 'Operationalization': prescriptions, measures and interventions to put the objectives into practice.
Attribute	Code specifying a FMP component. In line with the Components, 3 sets of Operational Codes were distinguished. In the second coding round, some Op. codes under Component 2 and all under Component 3 were re-identified as clusters as they had relevant thematic content.
Cluster	Specific characteristic of a phenomenon that specifies or contextualises the spiritual dimension attached to the phenomenon.
Cluster, Major	Combination, found in quotes, of one or more spiritual dimensions, attributes, and FMP (sub)components, which elicit recurring issues that potentially or directly involve spirituality.
Theme	Aggregation of related clusters to elicit major issues per component. There are 9 Major clusters. Clusters and Major clusters were organised according to the three components.
	Aggregation of related Major clusters, to elicit major issues across components. There are 3 themes.

## Appendix B. Explanation of codes, clusters and themes

Theme / Code	Comments on content
<b>I. First round of coding: dimensions of spirituality and operational codes</b>	
<b>I.i. Dimensions of spirituality</b>	
D0. Exp-Unspec.	This code is only applied when 'beleving' or 'natuurbeleving' (Du) in its totality is referred to, without emphasising any of the four experiential values. It is applied when there is a possibility that spiritual experience in connection with nature is facilitated; however, when it is clearly only technical-cognitive 'beleving', the code is not applied.
D1. Exp-Aesth	This code may include 'sense of wilderness'. Also: discovery, adventure (especially for youth, zie Drentsche Aa). Furthermore: "beleefbare natuurkwaliteiten" (nature qualities that can be experienced - Sallandse Heuvelrug). It also includes wonder about nature, including knowledge-related wonder. The code is only applied when the potential for a higher-level aesthetic experience is present.
D2. Exp-Relational	Also having a vision (e.g., 15:8) is part of this relational experience. In a vision the seer encounters non-material agents and powers, and relates to them.
D3. Exp-Restorative	Applied to texts referring to healing, restoration of identity, comfort, cultural renewal of persons and nations alike
D4. Exp-lifeorce	'Medicine' in quote 1:118 used in combination with power of the area. In more BC documents reference is made to this dimension. It occurs only in 1 NL plan (N10), but perhaps incorrectly.
D5. Pract-Ritual	References to ceremonies, worship, rites, retreats. This dimension denotes action generated by spiritual motives. Linked to experience and narratives, but also to the material-spiritual dimension, e.g. in the use of sacred objects for rituals. Includes "potlatch" as a "traditional decision-making structure" (Lakes District LRMP p. 3, quote 14:12)
D6. Myth-Narr	All stories and narratives in relation to the forest or the forest dwellers/users. Also increasingly appearing in Dutch texts in relation to educational programmes.
D7. Phil-Eth	Not only First Nations' reverence and ethics towards forest, but also governmental 'due diligence' towards FN interests (16:19, 16:20). Also 'sustainable' when it is used in a more abstract way: 'sustainable development', 'sustainable communities', in other words when a moral motivation may be seen behind the statement. A 'sustainable' harvest or wildlife population is not per se spiritually grounded, so left out if there are no other texts supporting inclusion. Also reference to 'Creator' included in this code.

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Theme / Code	Comments on content
D8. Material-spiritual	Material only when it refers to specific 'things' (physical phenomena) with a close link to spirituality. Not land - too wide, everything is related to land. Examples: longhouses & shelters for ceremonies; large trees for totem poles, safe places to store regalia. The code is not applied to land or large land features since this is too wide; everything in FMPs is related to land. Mobile items are the bult, unless it is a clearly distinguishable feature in the land such as burial tomb or traces of mediaeval roads or land cultivation patterns by monasteries (in NL).

**I.ii. Operational codes applied in first round**

The codes presented here were later merged with Clusters in Components 1 and 2)

Op.1.1. Descr_what is	This code is added when texts describe features, conditions or history of the area in relation to spirituality (hidden or open). This is also the code for relevant definitions of terms.
Op.1.2. Descr.Use	This code is applied to descriptive texts about how people use the area or elements of it, or how they have used it in the past.
Op.1.3. GovContext	Includes laws, acts, regulations and other legal governance arrangements affecting human-land interaction; also prescription for or description of consultation processes with First Nations, Stakeholders, local residents, etc. Is applied in descriptive texts as well as in prescriptive texts.
Op.2.2. ObjPrincGdl	Refers to spiritual connotations in objectives, and in the strategies, principles and guidelines formulated to achieve these objectives.
Op.2.3. Priorities	Refers to spiritual connotations in a more detailed level of planning, namely where choices or sequences have to be made. May also include financial status.

The rest of the Op. Codes (Op.3 and Op.4) were incorporated as Initial Themes under Component 3, Operationalisation, see below

**II. Second round of coding****II.i. Attribute codes (A codes)**

A. Aboriginal Rights	Selected when aboriginal rights are mentioned in relation to spiritually informed forest management, protection, history, connection with land, and similar links.
A. Ancestors	Ancestors are all persons who are believed to have lived in the past and to have passed their connection with the land/forest on to the generation currently living here.
A. Animals - domestic	Dutch plans mention domestic animals (dogs, preservation of old sheep & cattle breeds). They are coded Animals-domestic.
A. Animals/wildlife	Code applied when an animal appears to have symbolic value and there are open or hidden spiritual values attached to it (e.g. a moral imperative to preserve the species). This applies to wild animals. Dutch plans mention domestic animals (dogs, preservation of old sheep & cattle breeds). They are coded Animals-domestic. Animals are in some plans described as 'persons', perhaps reflecting ontologies which see no sharp difference between humans and other beings.
A. Art	Any mention of art in the plans related to spiritually related art or spiritually inspired forest management, protection, use of resources, etc.
A. Clearcut	Coded when mentioned in relation to (threats to) spiritual values and resources of forest and forest-related culture. This code also applies to Industrial Logging. The code often appears in connection with 'Disappear' (e.g. disappearance of cedar, in the Heiltsuk plan).
A. CMT	Culturally Modified Tree: stripping of bark or other traditional tree use which is intimately connected with rituals and oral traditions. Therefore connected to the Practical-ritual, Myth-Narr and Material-spiritual dimensions.
A. Continuation	Coded when reference is made to continuing past traditions; or concern is expressed for the continuation of forest, land, culture and traditions in the future; also, when prescriptions are given for inspired measures aiming at the future continuation of the immaterial values of forests
A. Cultural History	This was introduced when coding plan D22 / N08: Oisterwijk/Kampina, and adapted in all plans. It is applied to natural phenomena, archaeological features, or recent historic buildings and artefacts. Contrary to 'Culture', 'Cult. Hist.' here applies to historical objects, related or not to cultural practices. If such objects are related to relevant cultural practices but separately described, both 'Heritage' and 'Culture' can be applied. If it is a close combination of the two, the code 'Cult.Hist.' applies.
A. Culture	Applied where cultural matters are mentioned. 'Culture' often appears in texts as a container term for the whole of spiritual and social values within the FMP unit. It is only coded for texts referring to practical aspects of the cultural domain, when there is some element of action involved. This in order to distinguish it from 'Cultural History' which may refer to more static elements such as buildings or burial tombs
A. Disappear	Used when there is concern about the disappearance of forests or related cultural elements. Also: Destruction (of forests, especially old growth). Also: Destruction (of forests, especially old growth, or animals or other elements of forests, or related historical elements).
A. Forest structure	A broad term used to denote a varied forest that inspires visitors. The code includes 'diverse' and 'natural' forest, when the context suggests a non-scientific use of the term. There is some link with D. Phil-Eth in BC plans but not in all plans.
A. Identity	Identity linked to land, or (First) Nation, "who we are". Also as a 'Nation'. In NL also linked to symbolic phenomena such as the Black Grouse in Sallandse Heuvelrug. Identity can also refer to land property, such as an estate (Kampina, Document N05).
A. Landscape Vision	Only applied when it refers to the combination of visual, social and experiential values. This means it is a 'hinge' between the material and the immaterial values connected to the area. First applied in Plan 6, Drentsche Aa. May also be included when a range of 'sensitive values' is indicated, e.g. in 14:62 (Lake District).
A. Longhouse	Some plans mention the building or restoring longhouses as part of cultural education programmes. Traditionally, longhouses harbour families and as such are part of the First Nations' social organisation which has spiritual roots. As such, longhouses may be attributed with sacral meaning.
A. Old growth	Added because many associations are made with the cultural/spiritual value of old-growth forests, mostly cedar but also other species. Document D15/ B07 discusses old growth, but only in 1 place mentions 'landscape connectivity'. In the rest of the document, the discussion is only ecological, with no reference to First Nations or spirituality. Parallel in NL: "oude lanen" (old avenues"), "wildwallen" (wooded game walls), and perhaps other old features. Strong link with Practical-ritual dimension in BC plans, weak in NL plans.
A. Sacred knowledge	Applied when this term is used specifically to denote the sacredness of the knowledge. Other, less specified quotes about knowledge are coded by 'A. trad. Use/knowl'.
A. Sacred site	Sites with a 'sacred' connotation in the text: sacred areas, sacred mountains, seclude sites for retreat, etc. Graveyards or burial places are included when they are mentioned in the context of spiritual references (e.g. afterlife), but if not, they are coded as 'cultural heritage'.
A. Spiritual (Inspiration)	Only used when there is clear reference to 'the spiritual' but too general to allocate one of the spiritual dimensions to this quote. Could refer to spiritual inspiration (BC docs 1–5), spiritual well-being (doc. 12, Lakes District), or spiritual identity (ibid), or value (15:58, Peace-Moberly).
A. Spiritual danger	A special feature of the Experiential-Aesthetic, Narrative or Ethical dimension. Refers to feelings of fear among humans in wilderness, environmental damage caused by spiritual beings, or spiritual damage to humans when they do not behave ethically or, e.g., destroy forest.
A. Trad. Language	Contains Traditional Place Names and other references to traditional (Indigenous) languages. In Squamish LUP a clear link is made with spirituality: praying in traditional language is "powerful".

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Theme / Code	Comments on content
A. Traditional use/ knowledge	Includes Tradition use and Traditional knowledge - closely related terms. Often referred to in texts about wild food and herb collection, medicinal plants, traditional hunting, etc. Literature suggests that this use and knowledge is often spiritually informed, but this is hardly ever explicit. It cannot be excluded beforehand, either, hence this code is applied to all texts we can give the benefit of the doubt.
A. Tranquility	Includes remoteness; disturbance by (motorised) traffic; darkness (absence of urban lighting); air, (spatial) infinity.
A. Water	Applied when mentioned in relation to spiritual values, or directly indicating the potential of a spiritual value (experience, wellness, restoration or other). Includes 'riparian areas'. Not applied when it is merely an enumerations of facts ('land and waters' or other geographical indications) of product extraction ('fish and seafood' for instance).
A. Wilderness	Coded when mentioned as such in the text. Often related to experience, especially aesthetic experience.
<b>II.ii. Clusters, organised by component</b>	
<b>Component 1: Principles</b>	
1.1. Historical Roots	This code was used when historical or cultural motives are given as to why people attach meaning to land and why they should deal with land. Links in with Aboriginal Rights discourse, but is much broader than that.
1.2. Connection w. Land (of a group)	This is the over-all, deep connection of a group, community, or nation with the land. Usually there are historical ties, but statements can also refer to the present. This encompasses the spiritual connection (Code D2) that can be an individuals' connection to nature or a collective, spiritually experienced connection. Other criteria for this code: • - traditional knowledge embedded in the land. • - the notion that "everything is interconnected" • - the loss of connection, abandoned graveyards, disturbed places, etc. Re-connection: separate code from 3 May 2021 onwards, applied to all plans. Moral imperative to protect that "what has no voice", e.g.: "Neither the children nor the forests have a voice. And both are dependent on others to take care of them. Both are beautiful and deserve the right to be left alone to grow in their own beauty and identity" (Heiltsuk 5:56) Also: preserve for future generations: "...dat wat met zorg en liefde [werd] aangelegd, ook door volgende generaties wordt gewaardeerd". (Turfv. Landgoederen 12:18) ("...that what was established with care and love, is also valued by future generations". "Hence, the work to heal and protect the body of the area that is Say Nuth Khaw Yum is a task held closely to the heart of every Tsleil-Waututh". (4:20 Indian Arm) 8-5-2021 14:37:05, merged with 01. Integrated Stewardship Appr. This code was based on mentions of Integrated Stewardship, typified by this quote: "To effectively manage and protect the natural and cultural resources of the Park in a holistic and integrated fashion, while respecting cultural, economic, and recreational values. The Board will use an Integrated Stewardship approach in the management of the Park. The Integrated Stewardship approach combines Tsleil-Waututh principles of bioregional planning and holism with BC Park's ecosystem-based management approach. The Tsleil-Waututh approach is based upon maintaining deep knowledge of the interactions between biophysical and cultural landscapes." From Tsleil-Waututh (Indian Arm) mgt plan, quote 4:102.
1.3. Intrinsic/Moral	This is the former Op. code (Op. 2.1. Probl/Threats) for descriptions of problems affecting SV or ensuing from certain SV in the area.
1.4. Probl/Threats	This is applied when plans mention the weighing of nature and biodiversity values against experiential or other spiritual values. It is also applied when mention is made of discussions with stakeholders and external experts. This code also includes the obligation to make areas 'beleefbaar' (experientiable) (moral considerations). Includes also measures to avoid conflicts in uses.
1.5. Weighing & prioritise values	This is applied when a SV appears in a description of one or more positive aspects of the forest. Often it is the beauty and tranquility of the area that is treasured.
1.6. Strength/ positive factor	This means participation of stakeholders to enhance wonder and respect for nature and nature experiences. See also Spiritual Governance*.
1.7. Participation	And co-operation for the same purpose.
1.8. Spiritual Governance/Loss	In this theme 'spiritual' values among participants are articulated and incorporated in forest management planning. A strong motivation was concern about loss of forest, land, way of life, which is why this was included. Typical: "On 30 May 2015, the manager of the Turfvaartse Landgoederen invited local residents and other interested people to a 'dream walk' across the area. The participants of this walk indicated what they valued in the area, what they were concerned about, and what ideas or wishes they have for the future. This Nature vision was written on the basis of all information thus gathered."
<b>Component 2: Objectives</b>	
2.1. Spiritual Use/Healing/power	E.g., Cutting trees for ceremonial purposes; holding ceremonies etc. Any action that is not merely recreational and goes beyond 'experiential'. Also: healing and (spiritual) restoration from the land and land's products; Also: 'life force' and 'healing the territory'. Also life force, vital force.
2.2. Re-Connection	This refers to prescriptions in the plans to sustain, enhance or restore the connection with the land. Can also comprise indigenous learning systems (1:154) 0.12-5-2021 17:32:23, merged with 03. Community vitality. Strong communities in all respects through communal decision-making, a healthy environment and strong economy, jobs, healthcare, recreation opportunities etc. (18:181 Cassiar-Iskut Stikine). This as a result of good environmental stewardship Facilitating nature experience & connection with the land by creating awareness of the history of the area, through communication, storytelling or otherwise. Not only historical but also cultural connection. e.g. by designing facilities with First Nations motifs (4:63), using local language etc. "Verhalende waarde" or "narrative value" (Drents Firese Wold 11:42). Also retreat camps to learn from the elders e.d. In contrast, Historical Rights/ Motivation was used when history (or culture or the past in general) is given as a motivation to use the land. This is linked with the entire Aboriginal Title and identity discourse.
2.3. Hist'l awareness	Unspecified nature experience facilitated by maintaining wilderness areas with animals and allowing low-profile tourism. Also by rich biodiversity (e.g. butterfly route in plan N03, Sallandse Heuvelrug, quote 10:11). Includes 'beleefbaar maken' van 'beekdalen' ("Facilitate people's experiencing of stream valleys), Drentsche Aa 8: 94, 8:101). Includes "Darkness" as well (Sall. Heuvelrug 11:29).
2.4. Wilderness/animals experience	This code is applied when plans emphasise adventurous aspects of the area related to 'wilderness' and nature experience, especially also for youth. May includes (larger) events, if they bear any connection with spiritual dimensions.
2.5. Adventure, play	
<b>Component 3: Operationalisation</b>	
<i>Here, the clusters are equal to Operational Codes from the first coding round. Numbers of the first round have been retained.</i>	
Op. 4.5. Nature tourism	This code is applied to tourism intended to facilitate nature experiences. It does not include any touristic enterprise mentioned, but it does include, e.g., low-impact ecotourism, or backcountry tourism with low-level facilities. It may also include 'cultural tourism'. Later, on 21-5-2021, this operational code was merged with other codes as an overall cluster, Tourism (02), as aims and implementation are strongly entangled. It was observed to address many kinds of 'experiential' tourism in forest areas. The cluster therefore covers: Op.4.5 Nature Tourism; 'Tourists'; Walk/trek/routes (originally separate code, merged on 12-5-2021); financial considerations, like: "visitors pay to especially experience unique values" (22:14, Kampina); and everything to do with access to and through the landscape by walking, bicycling (no ATB), horseback trekking, canoeing etc. and experiencing landscape by one's own physical effort. This is in contrast to racing or adventure, though sometimes there is a 'grey area'. 17 June 2021: Cluster placed under Component 3, Interventions, as it mainly concerns action. Insofar as objectives are concerned, they are mainly aimed at 'nature' and 'wilderness' experience, coming under Cluster 2.4.

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Theme / Code	Comments on content
Op.3.1. Zoning/ Inventories/ Studies	This code refers to zoning within the planning unit(s), as well as Impact Assessments (e.g. archaeological) and other inventories and studies. Is the real 'hinge' between (abstract) ideas and concrete implementation (interventions).
Op.4.1. Protection	Refers to all spiritually inspired interventions for the protection of certain forest areas. It also includes access, or the opposite, closure of an area to enhance experiential or other spiritual values. In this context it may include access roads, waterways and measures to concentrate access at certain places to protect other areas for facilitating, e.g., spiritual experiences. In the same vein, parking places may be included. However, opening an access road for logging or other commercial use is not included.
Op.4.2. Restoration	This intervention was originally included as a separate code, then combined with Integrated Use, and again separated from it end September 2020, since restoration appeared to be quite different from integrated use. Applies to restoration of forest and nature as well as of cultural heritage objects.
Op.4.3. Responsible Exploitation	Refers to all interventions to implement forest use when mentioned in combi with spiritual, ethical or emotional notions, e.g. selective logging as a spiritually acceptable alternative to clearcut in BC, or production such as wool/meat from grazing sheep which are deployed to keep the heathland open to enhance aesthetic values. If large herbivores are used for keeping areas open and culled animals are left in the area to enhance biodiversity, the code for integrated use is not applied, but other codes may be applied such as A. Animals.
Op.4.4. Communication/ Education/ Knowledge	All mentions of communication and education programmes to enhance nature experiences, especially to youth, tourists, and adults. Is explicit in BC plans where cultural-spiritual education is foreseen for First Nations -their own population as well as visitors-, but can be implicit in NL plans when plans speak of enhancing wonder, aesthetic and other nature experience among visitors. The code also applies to knowledge generation, as far as it is related to the cultural/spiritual domain (purely ecological studies are excluded).

### Appendix C. Number and percentages of coded spiritual dimensions per location and per FMP component

Spiritual dimension	Location	Presences of spir. dimensions				Co-occurrences of spir. dimensions with components							
		Per location		All plans		FMP component			Totals				
		(N)	%	(N)	%	Principles			Per location		All plans		
						C1 (N)	C2 (N)	C3 (N)	(N)	(%)	(N)	(%)	
D0 Exp-Unspecified	BC	42	5	215	15	16	9	64	89	6	392	16	
	NL	173	29			58	74	171	303	31			
D1 Exp-Aesthetical	BC	178	21	343	24	71	30	208	309	21	547	22	
	NL	165	28			54	71	113	238	24			
D2 Exp-Relational	BC	117	14			99	66	56	221	15			
	NL	46	8	163	11	17	33	36	86	9	307	12	
D3 Exp-Restorative	BC	42	5			7	43	29	79	5			
	NL	24	4	66	5	10	16	24	50	5	129	5	
D4 Exp- Life-force	BC	15	2	15	1	13	6	7	26	2	26	1	
	NL	0	0			0	0	0	0	0			
D5 Practical-Ritual	BC	162	19			54	121	134	309	21			
	NL	14	2	176	12	4	6	12	22	2	331	13	
D6 Mythical-Narrative	BC	67	8			50	28	30	108	7			
	NL	92	15	159	11	40	53	53	146	15	254	10	
D7 Philosophical-Ethical	BC	153	18			82	66	103	251	17			
	NL	48	8	201	14	42	12	24	78	8	329	13	
D8 Material-Spiritual	BC	59	7			18	37	43	98	7			
	NL	37	6	96	7	17	15	20	52	5	150	6	
Total per location (N)	BC	835	100			410	406	674	1490	100			
	NL	599	100	1434	100	242	280	453	975	100	2465	100	
Total per location (%)	BC		58			28	27	45					
	NL		42			25	29	46					
Total all plans (N)		1434	100			652	686	1127					
Total all plans (%)						26	28	46					

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