



Sacred forests in space and time: Intangible Cultural Heritage and nature-based solutions

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Abstract: Sacred forests have a long history of protection and many of them are old-growth forests with centuries old trees important for conservation. Some of these forests can be traced back to lands and territories inhabited for millennia by Indigenous peoples. These sites are considered important in the development of religion and spirituality in our distant ancestors and today their Intangible Cultural Heritage demonstrates a special relationship between people and nature. Numerous examples of sacred forests exist throughout the world. These hundreds of thousands of sites are distributed across all inhabited continents. They are living example of nature-culture entanglements. In this paper, I present an overarching perspective on sacred forests that spans their global distribution and their historical origins. I propose a conceptual framework to understand sacred forests in space and in time. Based on this understanding of sacred forests, I suggest that their recognition, conservation, and sustainable management are essential to deliver nature-based solutions to today's global environmental challenges.

Key words: centuries old trees; indigenous knowledge; Intangible Cultural Heritage; nature-based solutions; old-growth forests; sacred forests.

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1. INTRODUCTION

Numerous case studies and examples of sacred forests from around the world have been published by my collaborators and I over the last 25 years (Figure 1). These include studies of sacred forests in Ethiopia (Massey Marks et al., 2023b); Gambia (Massey Marks et al., 2021a); India (Bhagwat et al., 2005a; 2005b; Brown et al., 2005; Ormsby & Bhagwat, 2010; Bhagwat, 2012); Italy (Frascaroli et al., 2014;

2016); Japan (Massey Marks et al., 2023a); Malaysia (Massey Marks et al., 2011; 2021b) and United Kingdom (Shepherd-Walwyn & Bhagwat, 2018). Furthermore, studies that integrate knowledge and understanding of sacred forests across continents have also been published, including Dudley et al. (2010) for Africa and Asia; Ormsby et al. (2016) and Bhagwat (2022) for Asia; Roux et al. (2022) for Asia and Europe; as well as studies that integrate knowledge of sacred forests globally,

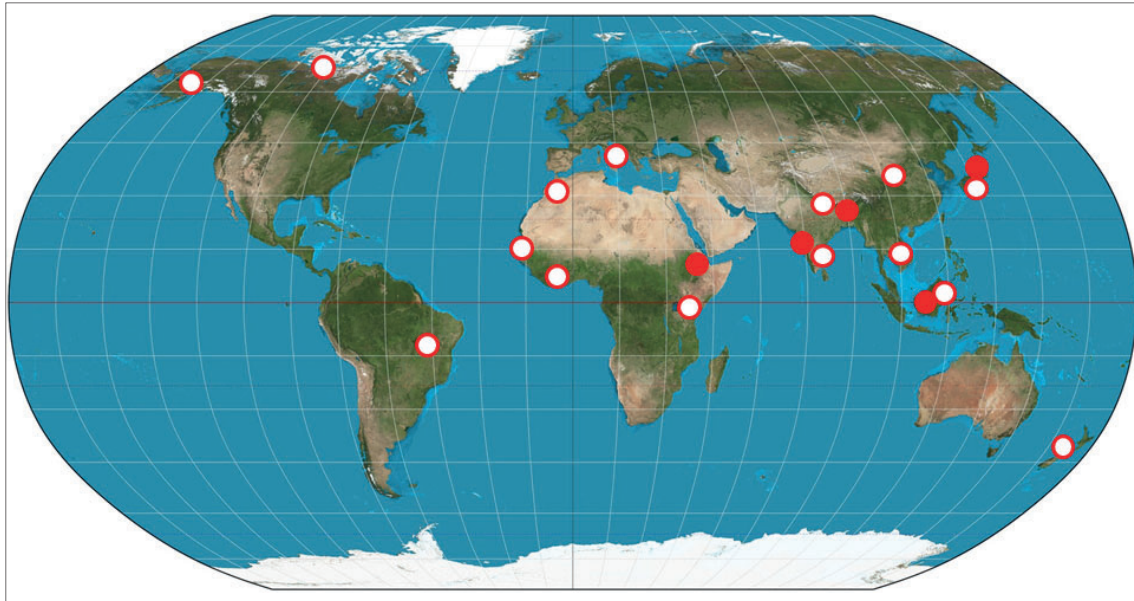


Figure 1 - Map of the world showing case studies of sacred forests discussed in this paper (filled red circles), and examples covered in the wider body of literature (hollow red circles).

including Bhagwat and Rutte (2006); Bhagwat (2009) and Pungetti & Bhagwat (2012). Several studies have also examined long-term dynamics of sacred forests on centennial and millennial timescales, including Bhagwat et al. (2012; 2014); Nogu   et al. (2017; 2018) and Kulkarni et al. (2021). Collectively, these case studies and examples provide significant insights into the salient features of sacred forests in space and in time. Here, I synthesise that knowledge to suggest why these landscapes are essential in addressing today's global environmental challenges including biodiversity loss, climate emergency, and food and nutrition insecurity.

A better understanding of sacred forests is also important for three additional reasons:

(1) These landscapes are relevant to environmental sustainability because they remind us of nature spirituality of our distant ancestors, founded on the reverence of forests in ancient cultures. In today's world, this connection is being lost rapidly, and urgent calls have been made to re-establish it (e.g. Miller, 2005). This

is particularly the case in cities, where the so-called 'nature-deficit disorder' (Louv, 2005), is severing the connection between people and nature. The concept of sacred forests can be significant in revitalising that connection.

(2) Sacred forests are living examples of biocultural diversity. Although their biocultural diversity is perhaps an unintended outcome of cultural protection (e.g. Zannini et al., 2021), the nature-society entanglements demonstrated in these forests provide the foundation for their biocultural diversity. Furthermore, these spaces are not only Intangible Cultural Heritage, but they are also storehouses of wild and domesticated biodiversity: medicinal herbs, rare varieties of edible plants and mushrooms, and wild relatives of cultivated plants. This diversity holds significant potential in building resilience to climate change (Willis & Bhagwat, 2009). They also demonstrate how cultural traditions have historically protected ecosystem services such as pollination of crops in the surrounding agricultural land, or pest control by providing habitat for predators (in-

sect-eating birds or rodent-eating reptiles), or groundwater storage in the uplands (e.g. Bhagwat et al., 2014).

(3) Most importantly, sacred forests are living museums and the guardians of customs and traditions of many Indigenous peoples (Thornton & Bhagwat, 2021). These customs have obviously changed with time, but they are a good reminder of distant civilisations (e.g. neolithic farmers) whose farming practices were in synergy with climate and seasonal cycles. Many modern societies today also practice farming in synchrony with seasonal cycles, but these cycles are being increasingly threatened by environmental change.

The case studies and examples presented in this paper highlight why recognition, conservation and sustainable management of Intangible Cultural Heritage in sacred forests are essential for conserving biocultural diversity, restoring the weakening connection between people and nature, and tackling global environmental challenges through nature-based solutions. The conceptual framework I present here treats space and time as two different dimensions. Space refers to the geographical space occupied by sacred forests. Time refers to the historical time over which sacred forests have developed. The framework goes beyond the Western view of nature-culture dualism (Haila, 2000) and posits that natural and cultural phenomena are connected through a porous boundary across the nature-culture axis (Figure 2, Figure 3). This framework helps to develop a holistic understanding of sacred forests and their significance as beacons of biocultural conservation.

Why is such a framework necessary? The Kunming-Montreal Global Biodiversity Framework has set ambitious global targets including the protection of at least 30 per cent of terrestrial and inland water areas, and of marine and coastal areas, especially areas of par-

ticular importance for biodiversity and ecosystem functions and services, by 2030 (<https://www.cbd.int/gbf/targets/3>). However, the International Union for Conservation of Nature's (IUCN) 2024 Protected Planet Report (<https://digitalreport.protectedplanet.net/>) noted that only 17.6% of land and inland waters and 8.4% of the ocean and coastal areas globally are within documented protected and conserved areas. For terrestrial conservation, this means that the global target of protecting 30% of land by 2030 is unlikely to be met. Here, protection of sacred forests as Other Effective Area-Based Conservation Measures (OECMs) can provide significant opportunities. For example, some estimates suggest that Sacred Natural Sites together with sites owned by world's major religious institutions might cover as much as 15% of Earth's land surface (Bhagwat & Palmer, 2009). Therefore, it is important and urgent to understand how biocultural conservation may intersect with global targets and how it can be supported in the modern context.

Although conservation of biological diversity is not central motivation for communities who have historically protected sacred forests, and continue to do so even today, all the examples that help to develop the conceptual framework presented here suggest that biodiversity conservation is an important, albeit perhaps unintended, outcome of sacred forest protection. The space and time dimensions in this framework, therefore, do not make explicit reference to biodiversity conservation, but assumes that these features lead to many positive outcomes including biodiversity conservation, climate change mitigation, and food and nutrition security. Collectively, these outcomes are important to provide nature-based solutions to some of today's most pressing global environmental challenges.

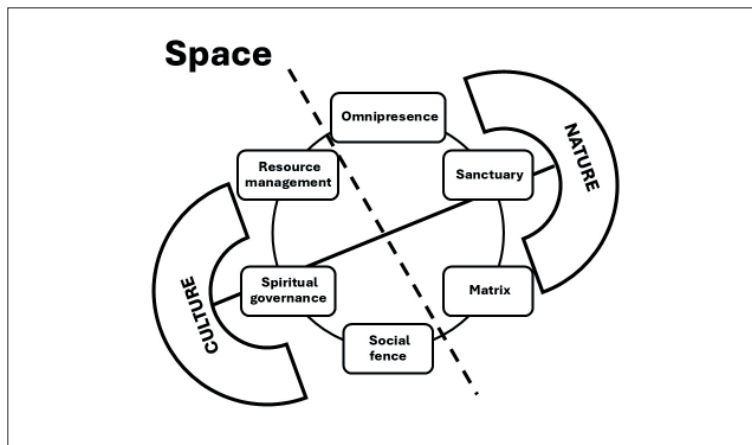


Figure 2 - Characteristics of sacred forests in space dimension, and across nature-culture axis.

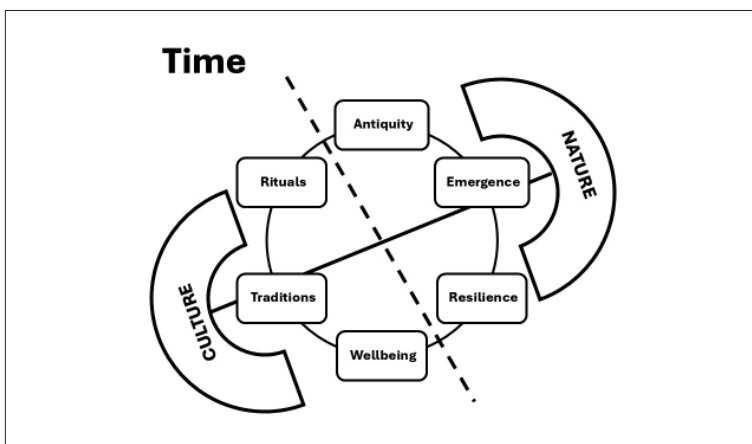


Figure 3 - Characteristics of sacred forests along time dimension, and across nature-culture axis.

2. SACRED FORESTS IN SPACE

Space here encompasses geographical space, from local to global, and inhabited by living beings as well as non-living entities (Figure 2). Many Indigenous animistic traditions consider non-living entities - rocks, mounds, hills, springs, lakes, oceans, coasts, waves, sand - as part of their kin. These traditions make little distinction between the living and the non-living entities and uphold the belief that ultimately the spirit that resides in all animate and inanimate entities is the same (Bhagwat, 2009). This co-evolution and co-dependence of human cultures with living and non-living entities are encapsulated in the concept of 'biocultural diversity' (Maffi, 2005).

There are six characteristics of sacred forests along the space dimension that make them important:

(1) *Omnipresence*: Sacred forests are present on all continents inhabited by humans (Bhagwat & Rutte, 2006). There are sacred trees, groves, forests, ponds, lakes and rivers. There are landscapes, waterscapes and seascapes. There are tiny sacred sites and there are enormous sacred spaces. They are often protected through informal rather than formal means. For nature conservation, this omnipresence is the most important property of sacred forests and the cultural landscapes in which they are situated.

(2) *Sanctuary*: In highly human-dominated landscapes, sacred forests provide refuges to many species that otherwise would not be

able to survive. Because of a long history of continuous protection in many cases, sacred forests harbour species and assemblages that are not found anywhere else. They support unique ecological communities (e.g. Brown et al., 2005) in many landscapes around the world, even through comprehensive global geographical coverage of the effectiveness of sacred forests in biodiversity conservation remains limited (Zannini et al., 2021).

(3) *Matrix*: This characteristic is very important in a world that is constantly changing. Climate change makes previously suitable habitats unsuitable and species have to be on the move (Willis & Bhagwat, 2009). Today's human-dominated world poses a serious barrier to the movement of species, but sacred forests can provide the connective matrix - much-needed stepping stones - for species searching for suitable habitats to move to. For example, a study of two afro-montane tree species in and around an Ethiopian church forest suggests that the presence of forest fragments in otherwise agricultural landscape is essential for the seed dispersal of *Olea europaea* and *Schefflera abyssinica* (Abiyu et al., 2016). Furthermore, this matrix can also provide ecosystem services to productive parts of land. For example, Massey Marks et al. (2023b) show that Ethiopian church forests are vital to provide pollination service to farmland in South Gondar region of Ethiopia.

(4) *Social fence*: Many sacred forests do not have hard physical boundaries, barbed wire fences or fortress walls. Nevertheless, the invisible social fence around them has been vital for safeguarding species and ecological communities (Bhagwat & Rutte, 2006). There are political and economic influences that can weaken the social fence, but by and large the social fence has proven effective through its reinforcement via local norms, developed by the custodians of sacred forests.

(5) *Spiritual governance*: Many sacred forests are protected through social conventions and taboos, rather than written rules or legislation. The term 'spiritual governance' refers to the belief that these sites are inhabited by ancestral spirits who protect them, and therefore the management of these sites needs to account for the presence of these spirits (Studley, 2019). The conventions are agreed by members of the local community and are founded on their shared spiritual values and commitment to these values (Bhagwat, 2022). There are economic, political or social factors that can weaken these values, but in large measure informal spiritual governance has been successful protecting of sacred forests.

(6) *Resource management*: The social fence and spiritual governance together lead to what can be considered effective management of resources. Natural resources are very difficult to manage in fair and equitable fashion because of competing interests and conflicts over resources, but the resource management in sacred forests often observes the principles of governing the commons (Ostrom, 1990). Sacred forests offer one of the best examples there is today of effective management of natural resources (Rutte, 2011). Collective action by members of a local community in the village of Greveniti, northwestern Greece, spanning over 300 years from 1668 to 2020, provides a powerful example of forest protection that has remained effective over time (Marini Govigli et al., 2021).

3. SACRED FORESTS IN TIME

Time here encompasses historical time, spanning centuries and millennia (Figure 3). Sacred forests are arguably the oldest examples known of conscious protection of nature by people. Literature on the history of sacred

landscapes suggests that many of these sites developed alongside more settled modes of existence in human societies (Chandran & Hughes, 1997). Sacred forests may have become more prominent when the human society adopted a settled mode of existence and became dependent on a particular physical space. This may have promoted the need to attach sacredness to protect certain spaces, also recognising the benefits of forests - including water storage, pollination, and access to medicinal herbs - in otherwise cultivated landscapes (Bhagwat et al., 2014). However, it should be recognised that such benefits were not the primary motivation for sacred forest protection.

The Indigenous knowledge underpinning the protection of sacred forests is an important reason why these forests have often withstood the test of time (Thornton & Bhagwat, 2021). Often passed down generations, such knowledge is codified into traditions and rituals that guide the protection of forests. The Intangible Cultural Heritage and spiritual values of sacred forests are often intertwined with the material benefits derived from the presence of these forests (Bhagwat, 2009). The time dimension is important because the codified knowledge and the benefits of rituals for positive environmental outcomes often make these institutions resilient to social-economic-political changes.

There are six characteristics of sacred forests along the time dimension that make them important:

(1) *Antiquity*: Many sacred forests have a long history of protection, meaning that the ecological communities they support, even if influenced by humans in large part, are unique. For example, intact soils that have sometimes developed over thousands of years and the below-ground ecological communities supported by these soils (e.g. Brown et al., 2005), highlight the importance of continu-

ous protection over time, making sacred forest valuable for nature conservation.

(2) *Emergence*: Not all sacred forests are centuries old, and there are many which have "emerged" because of societal influences at a particular time. The reasons for their emergence include, among other factors, changes in political regimes with the new regime offering more support to faith-based conservation; formalisation of land boundaries and strengthening of the social fence; recognition of what we call today as "ecosystem services" provided by the natural ecosystems within sacred landscapes (e.g. Bhagwat et al., 2014). The historical property of sacred forests to emerge in response to societal factors makes them adaptable to change and relevant even today as an example of resilient social-ecological systems (e.g. Marini Govigli et al., 2024).

(3) *Resilience*: The long history of sacred forests and their property to emerge in response to societal factors together makes them resilient institutions. In the face of environmental change, sacred forests have offered relatively stable spaces important for the protection of nature (Kulkarni et al., 2021). The ecosystem services from sacred forests have been beneficial to people to withstand harsh environmental conditions such as extreme heat or drought, shortage of food and fuel, or any environmental crisis that directly impacts natural resources.

(4) *Wellbeing*: It is well known that sacred forests have remained important for spiritual wellbeing of individuals and communities who have protected these sites. For example, Massey Marks et al. (2023a) suggest that people's happiness and a sense of emotional wellbeing in Japan corresponds with the presence of Shinto shrines. Such sites are also important for physical wellbeing through, for example, providing herbal medicines that have healing properties. In the absence of formal healthcare in some parts of the world, the herbs obtained

from sacred forests can provide a lifeline to people, as research on African, Asian and European sacred forests has suggested (Dudley et al., 2010; Pungetti & Bhagwat, 2012; Roux et al., 2022).

(5) *Traditions*: Sacred forests have historically supported the tradition of nature worship, also indirectly supporting a connection of people with nature and raising environmental awareness. For example, Massey Marks et al. (2011) and Massey Marks et al. (2021b) provide an example of forest conservation in Malaysia because of local people's belief in bears who dance on forested hilltops. Such sites have also been important for the development of many other traditions including painting or sculpture, as well as herbalism, which have relevance even today. Furthermore, as social spaces, many sacred forests have been instrumental in supporting aspects of Intangible Cultural Heritage such as folklore, dance, drama, music and other performing arts.

(6) *Rituals*: As social spaces, sacred landscapes have remained important sites for many rituals which are performed regularly by the community. These rituals directly arise from the traditions supported in sacred forests, often involving spirit possession and performance on behalf of the deity. These rituals reinforce the importance of ancestral spirits, believed to live within sacred forests. For example, Massey Marks et al., (2021a) suggest that in Gambia, where local people believe that forests are inhabited by dragons forests, are better protected from deforestation and degradation. Some rituals also promote better relationship of people with nature, better relationships between people, intergenerational transfer of knowledge, and communal harmony through conflict resolution. Many of these rituals are the cornerstones of spiritual governance and resource management within sacred forests.

4. CONCLUSIONS

In conclusion, sacred forests demonstrate synergy between nature and culture. These sites and the traditions they uphold have evolved over a long period of time, making them institutions that are resilient to environmental and social changes, and adaptable to changing contexts. These sites are shaped by people for centuries and millennia and even though their meaning to custodian communities has changed over time, they continue to exist to the present day. Far from 'pristine' these landscapes are lived-in and used by people. There are many reasons to believe that the Intangible Cultural Heritage in sacred forests is relevant today. These forests are a reminder of (1) the direct connection to nature spirituality of our distant ancestors, which can be adapted in the modern context for effective protection of nature; (2) culturally-grounded example of nature-based solutions because sacred forests offer multiple benefits to people including the delivery of wide-ranging ecosystem services; (3) customs and traditions of many Indigenous peoples, making them living museums and guardians of best practices in natural resource governance. The framework provided in this paper helps to understand how biocultural conservation may intersect with global conservation targets. It also helps to identify ways in which biocultural conservation can be supported in the modern context. Finally, it demonstrates nature-based solutions that are culturally grounded and are important to address today's global environmental challenges.

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