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A Conservation Biologist and a Religion Scholar Walk into a Sacred Natural Site

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The increasing interest among conservationists in sacred natural sites (SNS) prompts an exploration into how environmental scientists perceive and interpret the sacredness of these sites. The growing body of literature on SNS reveals an emerging dialogue within the science-and-religion debate, presenting an opportunity to reexamine the local and contextual character of the debate. The trend also underscores the potential for mutual learning. If religion scholars pay attention to scientific research on SNS and engage with its findings, they could enhance their comprehension of secularization, explore the dynamic character of the sacred, and embrace interreligious perspectives. In contrast, conservationists could also benefit from the insights of religious studies, theology, and cultural anthropology. These insights offer a nuanced understanding of cultural practices such as taboo and ritual, a recognition of the value of indigenous knowledge systems, and a caution against the limitations of scientific reductionism.

Conservation Biology Meets Religion

Sacred natural sites (SNS) are "natural features or areas of land or water having special spiritual significance to peoples and communities" (Wild and McLeod 2008). Since the first academic paper on sacred forests was published almost fifty years ago (Gadgil and Vartak 1976), there has been a remarkable growth of international interest in SNS, traditional ecological knowledge, and indigenous and community-conserved areas as alternative forms of nature protection (Berkes 2012; Corrigan and Granziera 2010; Verschuuren 2007; Wild and McLeod 2008; see also the IUCN WCPA Cultural and Spiritual Values of Protected Areas Specialist Group). This trend is reflected in the continuous growth and diversification of scholarly literature on SNS.

In an influential paper, Nigel Dudley, Liza Higgins-Zogib, and Stephanie Mansourian (2008) affirmed that "sacred natural sites are almost certainly the world's oldest form of habitat protection," and there is mounting evidence that SNS form "a largely unrecognized shadow conservation network." A recent systematic review of the literature concludes: "SNS have positive effects on biodiversity across continents and geographical settings, as found in a number of local studies and earlier overviews" (Zannini et al. 2021, 3747; see also Sullivan et al. 2023). Another review, however, warned that the understanding of "sacredness" in the literature is under-researched and suffers from reductive associations, binary thinking, instrumental views, Western-centric perspectives, a lack of clear definitions, overlooked power dynamics, and limited interdisciplinary approaches (Tatay and Merino 2023).

Historian of science David Livingstone (2003) argues that the location of a scientific endeavor makes a difference to the conduct of science, even affecting its content. The cultural milieu, local expertise, institutional structures, channels of knowledge transmission, and geographical influences significantly impact the reception of ideas, the practice of science, and how knowledge spreads and interacts with religion (Brooke and Numbers 2011; Smedes 2008). More recently, James Chappel (2020, 18), reflecting on the "spatial turn in religious studies," suggests that the "logic of sanctuary" is an appropriate spatial metaphor for the study of contemporary religion. It is also useful for the study of SNS and protected areas.

Contextuality and locality matter and need to be brought into the science-and-religion dialogue. Moreover, since there is no single methodology in science and religion, and since conservation disciplines also vary in their methods, a "focus on local and particular themes" (Visala and Vainio 2018) seems more promising to bring the dialogue forward. SNS research offers a privileged venue for testing the possibilities and limits of this dialogue because, in most faith traditions, "place itself is the primary locus of devotion" (Eck 1981, 323).

In this article, I intend to fill in a gap in the literature by exploring the potential for mutual enrichment the conversation around SNS is offering both

conservationists and religion scholars. With this purpose in mind, I first analyze the possibilities for learning and enrichment the scientific study of these sites offers to theologians and scholars of religion more broadly. Then, I explore the contribution the latter can make to conservation biologists (as well as protected areas managers and policymakers) to deepen their knowledge and thus open new lines of research and practice.

What Can Religion Scholars Learn from Conservationists?

Enhanced Understanding of Secularization

The idea of sacredness and the particular ways it is experienced in local contexts varies widely, even for people belonging to the same religion or belief system (as well as between formal and folk religion), making it a very complex phenomenon. Despite this, the frequent reference to the term "sacred" in scientific publications on nature conservation speaks to the surprising contemporary relevance of religion. The new scientific interest in religion, the integration of indigenous epistemologies and postcolonial viewpoints, and the trend towards pluralism in SNS research may indicate a shift towards a "post-secular" age (Berger 1999). This trend embraces diverse spiritual expressions, with environmentalism notably prominent (see Taylor 2007, 345–51), coexisting alongside a predominantly secular mindset influenced by modern science and technology.

It is true that research on SNS has not explored the multiple meanings of the term or explicitly tackled secularization (a central debate in the sociology of religion over the past sixty years). However, it has indirectly helped deepen understandings by highlighting how religion and spirituality continue to influence contemporary environmental conservation efforts in both secularized and non-secularized cultural contexts.

Given the growing interest in characterizing culture's influence on land systems (Hodel, le Polain de Waroux, and Garrett 2024), the exploration of SNS across different geographical locations offers valuable insights into how global conservation practices are adapting to very diverse cultural and religious contexts (see, for example, the case of Tibet in Sehnalova 2019). This reflects the complex interaction between global conservation initiatives and local religious practices, contributing to a diversified understanding of secularization as a nonlinear, nonhomogeneous, and context-dependent process. It also reveals the complex, dynamic, and nuanced types of sacralization, desacralization, resacralization, and mutation of the sacred currently taking place in these sites (Tatay and Merino 2023), challenging the dominant narrative of secularization as a historical inevitability that follows the path of the West (Davie 2010).

By examining and comparing how SNS are valued and protected in particular places, religion scholars could explore the ways in which the sacred persists, reawakens, or is even created anew in supposedly secularized societies such as

Norway (Kraft 2010) and Finland (Mantsinen 2020), or how it sometimes mutates or declines in deeply religious societies such as in Benin (Ouré et al. 2023) and India (Chandran and Hughes 2000), offering valuable insights into the complex interplay between religion, culture, globalization, and nature conservation.

Conservationists' discoveries, emphasizing the endurance and variety of sacred sites, align with the concept of a pluralistic society that respects and integrates various religious beliefs alongside a secular, science-driven worldview. The SNS literature offers theologians and scholars of religion a fresh perspective on the intricate discourse of secularization in Western—and non-Western—contexts, echoing Peter Berger's (1999) "desecularization thesis" and his later pluralistic stance in *The Many Altars of Modernity* (Berger 2014). In summary, SNS research challenges assumptions about modernization inevitably leading to religious decline and delves into the concept of the post-secular (Habermas 2008; Taylor 2007; Berger 2014), highlighting the coexistence of scientific, non-metaphysical rationality with emerging post-metaphysical forms of reasoning alongside pervasive premodern worldviews. The renewed scholarly interest in SNS suggests a nuanced understanding of secularization, where secular conservation efforts do not entirely disregard or supplant spiritual and religious values but rather integrate them into more comprehensive conservation strategies.

Embrace Interreligious Perspectives, Consider Indigenous Knowledge Systems, and Revisit Animistic Understandings of the Sacred

Research on SNS necessitates a cross-cultural understanding, as these sites exist in most faith traditions and are inhabited by communities that share diverse beliefs (Hegde, Ziegler, and Joosten 2020) or indigenous groups who combine animistic beliefs and theistic elements borrowed from world religions (Shaygozova, Muzafarov, and Sultanova 2018; Tatay and Merino 2023).

The inevitably pluralistic perspective of these studies highlights shared values and similar practices in environmental stewardship and conservation efforts across different faiths. By examining the diverse religious narratives and practices associated with these sites, religion scholars can explore universal themes of sacredness, respect for nature, and communal responsibility. They can also gain insights into the mechanisms identified by conservationists in relation to taboo, ritual, pilgrimage, ancestor worship, and narrative, fostering a dialogue that transcends religious boundaries and enriches ecumenical and interreligious discourse on ecology (Bahr 2015; Tatay and Devitt 2017). For instance, it is particularly revealing how some sites in India and Africa have kept their sacredness after the arrival of theism (mainly Hinduism, Christianity, and Islam).

Moreover, SNS studies offer religion scholars and theologians new avenues to explore the concept of the sacred through various interreligious approaches and insights:

1. Showcasing the ways in which different cultures and religious traditions understand and interact with the sacred while protecting it through analogous mechanisms. This "convergence in diversity" encourages theologians to consider more inclusive and multifaceted interpretations of sacredness that go beyond their own religious dogmas while reconsidering animistic insights (Harvey 2006).
2. Highlighting the intrinsic connection between ecological systems and sacred values. Religion scholars can explore how the sanctity of nature is perceived and enacted across different faiths, enriching interreligious discussions on creation care and environmental stewardship (see, for instance, the United Nations Environment Programme's Faith for Earth Initiative).

The emphasis on local perspectives in the literature also highlights the importance of indigenous knowledge systems and native peoples' spiritualties in understanding the sacred. Again, the focus on specific locations underlines the importance of place in spiritual practice and belief, reflecting the recent "spatial turn in research on religion studies" (Knott 2010) and showing—as Elizabeth Allison (2015) puts it in a study on Himalayan local deities—that religion is "inscribed in the landscape." Religion scholars could learn from these approaches, which often integrate spirituality and traditional ecological knowledge, for instance, exploring place-based spirituality and examining how the sacredness of a particular site informs and shapes local religious experience and practice.

Finally, animism (Harvey 2006), panpsychism (Leidenhag 2021), and conservation biology present differing, often conflicting views on the agency and role of objects, plants, and animals. Some scholars, however, argue that these differences reflect alternative—or even complementary—ways of understanding the world rather than direct conflicts (Verschuuren et al. 2010; Van Eyghen 2023). For example, many SNS across the world are believed to have "guardians" or "spirits" associated with them (see the extensive review by Verschuuren et al. 2010). In fact, the recognition of sacredness aligns with some of the principles of animism, which sees nature as inhabited by spiritual beings or forces, suggesting an approach to conservation that transcends utilitarian views while respecting both biological diversity and cultural traditions (Sinthumule 2022). By recognizing the intrinsic value and interconnectedness of all living beings and natural elements, indigenous knowledge systems often encourage a holistic approach to environmental stewardship.

In sum, by engaging with the literature on SNS, religion scholars can expand their understanding of the sacred, incorporating insights from diverse cultures, faith traditions, and academic disciplines (see, for instance, the "new animism" and the ecological reading of the Hebrew Bible by Mari Joerstad (2019), or the literature on panpsychism). This may in turn lead to a richer, more profound science-engaged study of religion that takes into account cultural dynamics, incorporates recent findings from the conservation literature, and responds to mounting conservation challenges.

Collaborate with Scientists Engaged in Research on Sacred Natural Sites and be Informed of Developments in the Literature

Conservation studies draw from different disciplines and rely heavily on quantitative data to assess biodiversity, ecosystem health, and conservation outcomes. As the father of conservation biology Michael Soulé (1985) points out, the discipline's synthetic, multidisciplinary character integrates ecology, biogeography, population biology, sociology, anthropology, ethics, and ecophilosophy. Recent studies on SNS have confirmed the need for multidisciplinarity. For instance, conservation biologists often utilize social science methods to conduct surveys and interviews with stakeholders. They also use Geographic Information Systems to map biodiversity hotspots and conservation areas, analyzing their distribution, ecological significance, and potential threats.

Religion scholars are finding inspiration in this multidisciplinary research to grasp a deeper understanding of the spatial dynamics of the sacred (on "sacred geography," see, for instance, Diana L. Eck (1981)), its relationship with secular values (Knott 2015), and specific features of the sacred (see, for instance, Jaime Tatay-Nieto and Jaime Muñoz-Igualada (2019)). Since SNS research emphasizes the importance of understanding local contexts within global biodiversity conservation frameworks, religion scholars can also learn from this literature to reexamine how global religions are, in practice, adapted and lived out in diverse local, biocultural contexts. For example, recent publications on Hindu (Acharya and Ormsby 2017), Buddhist (Sehnalova 2019), and Christian (Kraft 2010) SNS reveal the cross-fertilization potential that exists between cultural politics, conservation, and specific theologies.

Likewise, by considering social scientists' and conservation biologists' use of ethnographic methods and case studies, religion scholars could also gain insights into how spiritual beliefs (like taboo, sin, healing, or karma) interact with TEK, influencing environmental attitudes and behaviors (Woodhouse et al. 2015; Zeng 2018). This can lead to more nuanced understandings of how the sacred is lived and experienced in local contexts. For instance, Catharina de Pater et al. (2024) recently explored how spiritual values are articulated in forest management practices in the Netherlands, shedding light on the role of "forest spirituality." Relatedly, religion scholars may learn from recent studies on the impact of religious practices on environmental stewardship to understand attitudes towards environmentalism (Roux et al. 2022). Since conservationists frequently use participatory approaches and engagement with local communities, religion scholars (as well as theologians and religious leaders) should be informed about recent findings in conservation science so they can foster better discussions within their respective religious communities.

Finally, at the advocacy level, the conservation of SNS often involves navigating complex moral and political terrain, balancing conservation goals with respect for local cultural and spiritual values. Since, as Soulé (1985, 727)

argues, "ethical norms are a genuine part of conservation biology," religion scholars may explore how moral considerations are addressed in conservation research (Tiedje 2007; Manfredo et al. 2016). In fact, Christian and Muslim leaders are already applying these insights to develop more nuanced theological arguments about the ethical imperatives of environmental stewardship or "creation care" (see Francis 2015; Llewellyn and Khalid 2024).

In essence, conservation sciences have the potential to inspire religion scholars to embrace inclusive strategies and perspectives when exploring sacred phenomena in natural environments. Spiritual leaders informed by religion scholars and theologians could then potentially influence their followers in nature conservation (for instance, in some places, monastic communities are already an example of sustainable resource management). This approach can foster a type of science-engaged religion (Perry and Leidenhag 2023) that, in turn, can inspire a religion-engaged conservation science. To this pole of the dialogue, I now turn.

What Can Conservationists Learn from Religion Scholars?

Incorporate Insights from Cultural Anthropology and Sacramental Theology

Cultural anthropologist Kristina Tiedje (2007) warns that the concept of "nature as sacred," when intentionally borrowed from indigenous worldviews by conservationists, may overlook the complexity of tribal differences and the subtleties of religious worldviews. Nature is already sacred to most indigenous communities but in ways environmentalists often do not fully understand (Milton 1999). Sacramental theologians and cultural anthropologists, with their emphasis on the symbolic presence of the divine in the material world, offer scientists a way to understand how different cultures perceive and interact with particular elements of nature (see Hart 2006; Deane-Drummond 2008, 56–68). They also bring a more granular understanding of the secularsacred continuum, preventing dichotomous, binary interpretations of these categories (Rappaport 1971; Tatay and Merino 2023, 7)—a nuanced understanding that can enrich conservationists' view of nature and biodiversity by framing these sites not just as ecological treasures but as places imbued with spiritual significance (see John Inge (2017) for a theological analysis of the difference between space and place).

For most indigenous peoples, the physical and spiritual realms overlap, with the material world seen as a vehicle of divine grace. SNS, in particular, are "powerspots" (Rots 2019; see also Keller 2014, 89) that connect the living with their ancestral identity and imply reciprocity and some type of ritual exchange. For instance, as Muslim theologians have indicated, an Islamic nature preserve (*hima*) "is sacred by virtue of the sanctity conferred on it by God" (Llewellyn et al. 2024, 46). These are sites where a contractual relationship (Byers, Cunliffe, and Hudak 2001) between the local community and the god(s), ancestors, or spirits

is established, binding individuals together in a web of reciprocal commitments, fostering social cohesion and solidarity within communities (see the classical work on the importance of gift exchange by Marcel Mauss ([1925] 2016)).

In other words, SNS are "manifestations of a deep emotional bond between people and nature," a form of "place attachment" learned "through the process of socialization involving rituals, use of artifacts, storytelling, and place visits" (Mazumdar and Mazumdar 2004, 385). This is why conservation of these sites is not primarily motivated by ecological considerations but rather by a profound reverence for a numinous presence that needs to be reenacted. The values that underlie these motivations cannot be easily changed or instrumentalized for the sake of conservation (Manfredo et al. 2016).

Most, if not all, religious traditions involve narratives, rituals, and practices that express a sacramental, reverential attachment to particular sites. By learning about and taking into account these locale-dependent beliefs and practices associated with SNS, scientists and managers will interact more effectively with local communities, integrating these insights into theology-engaged conservation strategies. For example, conservationists' explorations in "resource and habitat taboos" (see the seminal work of Johan Colding and Carl Folke (2001)) are being contextualized, enriched, and deepened with these anthropological and theological insights.

Appreciate Indigenous Epistemologies and Religious Wisdom

Religion scholars, theologians, and cultural anthropologists are experts in interpreting religious beliefs, ideas, and concepts (such as profane, pure, holy, or sacred), as well as cultural institutions and practices (such as ritual, taboo, pilgrimage or ancestor worship), that are relevant to nature conservation. They provide critical perspectives on the relationship between religion and conservation across cultures, highlighting the potential for both conflict and cooperation between these domains. They can thus assist conservationists working on SNS to gain a more nuanced understanding of cultural practices by providing insights into the historical, cultural, and theological contexts that shape these practices and institutions exploring the potential of a "sacred ecology" (Berkes 2012) and "belief-based nature conservation" (Hegde, Ziegler, and Joosten 2020).

Theologians and cultural anthropologists can also help conservation biologists interpret religious texts and narratives that are relevant to conservation while expanding literal and reductive scientific readings (Zeng 2018). For example, they can help identify passages in sacred texts and oral traditions that emphasize the importance of preserving the natural world, which can be used to build support for conservation efforts among religious communities. As anthropologist Selnich Vivas (2015, 144) points out, the role of storytelling, singing, and dancing in the *minika* from Colombia, is "an indispensable tool for biodiversity conservation." In relation to the importance of narrative and naming particular

places, Vivas argues that, for this indigenous people, "to know its name is to know its ecosystemic value, its history" (Vivas 2015, 135). In South Africa, like in Colombia, Ndidzulafhi I. Sinthumule (2022) studied community attitudes and traditional practices that help protect two Vhutanda SNS. Sinthumule (2022, 1) "examined the role of spirits in governing and managing SNS" and showed their importance as a prerequisite for protecting biophysical resources. As mentioned, recent research on animism and panpsychism could also prove helpful to expand understandings of the agency of nature.

From a social science perspective, institutional economists are also increasingly interested in the role of SNS as "commons" and are gaining valuable insights from the emerging research on "sacred commons" (Rutte 2011) and "spiritual commons" (Samakov and Berkes 2017). Elinor Ostrom et al. (1999) highlighted that "institutional diversity may be as important as biological diversity for our long-term survival." The knowledge and wisdom accumulated by world religions, characterized by a global institutional structure and a robust grassroots presence, in articulating the universal and the local through subsidiarity can offer significant contributions to conservation. Recent Christian (Francis 2015, 2020) and Muslim (Llewellyn and Khalid 2024) theological developments reflect this trend. For instance, by delving into the historical context and evolution of local taboos and ritual practices in particular SNS, religion scholars can shed light on the intricate relationship between spiritual beliefs and environmental practices.

On a practical level, fostering dialogue and collaboration between conservationists, protected area managers, and religious communities through the facilitation of local spiritual leaders can significantly enhance trust and mutual understanding between these groups (see the work led by the IUCN in Mallarach 2008). This inclusive approach recognizes the value of integrating science-based management and indigenous knowledge (traditional ecological knowledge), as recently exemplified by the joint workshop organized by the Pontifical Academy of Sciences and the Pontifical Academy of Social Sciences (2024). By engaging with religious leaders (such as priests, monks, rabbis, imams, and shamans), learning from ancient spiritual wisdom, and paying attention to modern religious initiatives, natural scientists and protected area managers can develop culturally sensitive conservation strategies that respect local traditions and practices, ultimately contributing to long-term nature conservation.

Be Cautious about the Limitations of Scientific Reductionism

Science is not a placeless or ahistorical activity. It is profoundly embedded in specific places, times, and cultures. The literature on SNS supports Livingstone's (2003) thesis of a place-based science by highlighting the importance of location and history in shaping knowledge. In a similar way, Jared Diamond (2005) argued that a society's success in sustainably managing natural resources relies on both its technological capabilities and its cultural values, emphasizing

the interplay between these factors in ecological sustainability. This perspective is also a warning against the "exclusive stress upon sense perception for the provision of data respecting nature," since, as Alfred N. Whitehead (1968, 133) persuasively argued in his critique of modern science, "pure sense perception does not provide the data for its own interpretation."

To interpret SNS, natural scientists (as well as managers and policymakers) should keep in mind that these sites are significant for custodians and native peoples not only due to their biocultural diversity but especially for their role in shaping and preserving local identities and traditions (Tiedje 2007; Woodhouse et al. 2015). Since SNS have been successfully managed and governed by indigenous communities using traditional knowledge—which is closely tied to specific locales—interacting with these ancient cultural institutions requires caution against global generalizations and utilitarian approaches. As several authors have pointed out, in incorporating local taboos into conservation initiatives, there is the risk that scientists use "culturally sophisticated institutions" in a reductionist manner (Osterhoudt 2018) or interpret the sacred "in a binary, dichotomous way, as opposed to the profane and wild related" (Tatay and Merino 2023, 1).

The conservation of SNS thus requires assuming holistic approaches to knowledge and management that value the interconnectedness of the natural world alongside cultural, spiritual, and ecological dimensions. Major world religions have emphasized both the limitations of scientific knowledge and the importance of understanding the environment in its entirety, including its cultural and spiritual significance, rather than reducing it to purely materialistic terms (Francis 2015, n. 63; Llewellyn et al. 2024, 2.22; see also Kauffman 2008). This holistic worldview stands in contrast to specialized scientific approaches that tend to fragment knowledge (for instance, focusing only on biodiversity), overlooking the complexity of socio-ecological systems.

In essence, SNS are rich repositories of local knowledge and practices that reveal the spiritual, intrinsic value of the environment beyond its material, instrumental dimensions. These sites act as living examples of how embracing religious insights and diverse disciplinary understandings of the natural world can counteract scientific reductionism by highlighting the importance of cultural, spiritual, and ecological dimensions in shaping our relationship with the environment. Religion scholars offer complementary perspectives that challenge the reductionist views prevalent in mainstream conservation science, preventing it from falling into the traps of "simplification, functionalism and misappropriation" (Osterhoudt 2018, 5).

Conclusion

I have argued that recent academic exploration of SNS in the context of conservation biology, landscape ecology, and protected areas management reveals the emergence of a new, promising dialogue within the contemporary

science-and-religion debate. This research offers, as far as I can see, an opportunity to articulate "conjunctive explanations" (Finnegan et al. 2023) and reexamine the contextual, local character of the debate (Visala and Vainio 2018, 3–4), emphasizing the potential for mutual learning.

Religion scholars can benefit from paying more attention to scientific research on SNS. Science-engaged religious studies will enhance their comprehension of the secularization process, better understand the dynamic character of the sacred, and value the importance of place while adopting interreligious perspectives. By exploring universal themes of respect for nature and communal responsibility, they can also gain insights into the mechanisms identified by conservationists in relation to taboo, ritual, pilgrimage, ancestor worship, and narrative. This dialogue can enrich ecumenical and interreligious discourse on ecology while preventing theological dogmatism.

Natural scientists and protected area managers, on the other hand, can also benefit from the insights of religious studies, theology, and cultural anthropology. Their contributions offer a nuanced understanding of cultural practices, a recognition of the value of indigenous knowledge systems, and a caution against the limitations of scientific reductionism. By embracing these perspectives, they can develop religion-engaged, culturally sensitive conservation strategies that respect local traditions and practices, ultimately fostering understanding and collaboration between custodians, indigenous communities, conservationists, and managers.

In sum, a growing body of research on SNS is showing that science-engaged religious studies and religion-engaged natural sciences offer better conjunctive explanations—and hopefully better conservation practices—of these valuable biocultural hotspots. Conservation biologists, protected area managers, policymakers, anthropologists, historians, and theologians should learn from each other and work together to preserve this precious conservation network for the sake of a more sustainable future.

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