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INVESTIGATING SACRED GROVES AS INDIGENOUS SYSTEMS OF BIODIVERSITY CONSERVATION IN AFRICA

Peter Anakobe Adinoyi & Grace Motunrayo Isaiah, PhD

Federal University Lokoja, Department of Christian Religious Studies

peter.adinoyi@fulokoja.edu.ng; grace.isaiah@fulokoja.edu.ng

Orcid: <https://orcid.org/0009-0008-5880-9888>

Abstract

Sacred groves are patches of forest or vegetation set apart by local communities and protected through religious belief, taboo and customary law. Across Africa, they have functioned for generations as what contemporary conservation science now recognises as in-situ biodiversity refugia, sheltering plant species, animal populations and hydrological systems that surrounding landscapes have lost to agriculture, logging and urban expansion. Yet sacred groves have been marginalised in formal biodiversity conservation policy, which has tended to privilege state-administered protected areas built on Western scientific models. Recent literature published between 2024 and 2026 has begun to reverse this neglect, with a growing body of ecology, ethnobotany and indigenous knowledge scholarship documenting the empirical conservation outcomes that sacred groves deliver. What the literature has not done sufficiently is examine sacred groves as coherent indigenous systems, meaning not merely as repositories of plants and animals but as integrated regulatory, cosmological and governance structures that produce conservation outcomes precisely because they are grounded in communities' religious and social life. This paper fills that gap. It employs a historical and hermeneutical analytical method to examine how sacred groves function as indigenous biodiversity conservation systems across Sub-Saharan Africa, with particular attention to West Africa and Nigeria. The study finds that sacred groves deliver measurable biodiversity outcomes, that their effectiveness is inseparable from their cosmological and governance foundations, that they are under serious threat from deforestation, religious conversion, urban growth and climate stress, and that formal conservation policy has consistently failed to protect

them because it misunderstands what they are. The paper concludes with targeted recommendations for policy, research and community-level action.

Keywords: sacred groves, biodiversity conservation, indigenous knowledge systems, African Traditional Religion, taboo, conservation governance, Nigeria

Introduction

The relationship between religion and ecology in Africa is not metaphorical. It is structural. Communities across Sub-Saharan Africa have for centuries demarcated specific patches of forest, wetland or grassland as sacred, forbidding their clearance, cultivation or exploitation through religious sanction and customary rule. These sacred groves are not simply cultural curiosities. They are functional conservation institutions, and recent ecological research is making this case with increasing precision. Studies published between 2024 and 2026 have documented that sacred groves in West Africa, East Africa and southern Africa harbour plant species richness, small mammal diversity and pollinators at levels that surrounding agricultural and secondary forest landscapes cannot match (Sinu et al., 2024; Amoah et al., 2025; Boafo et al., 2024). This is not accidental. It is the outcome of a governance system that combines cosmological belief with enforceable community rule, a system that modern conservation science, stripped of its cultural context, has struggled to replicate.

The problem is that formal biodiversity conservation policy in Africa, shaped largely by the Convention on Biological Diversity, national protected area legislation and the frameworks of international organisations such as the IUCN, has historically treated indigenous conservation systems as supplementary at best and irrelevant at worst. Protected area design in Nigeria, Ghana, Kenya and across the continent has proceeded by gazetting state-managed reserves that often exclude the local communities whose customary knowledge and practice had already been doing the conservation work for generations (Coulibaly-Lingani et al., 2024). Sacred groves sit outside these formal frameworks, receiving neither legal protection nor institutional support, which leaves them exposed to exactly the pressures, agricultural encroachment, fuelwood extraction, religious conversion and infrastructure development, that national parks are designed to resist.

Recent scholarship has begun to argue that this policy gap is not merely a missed opportunity. It is an active conservation failure. Amoah et al. (2025) demonstrate that in Ghana, communities that maintain strong taboo enforcement around sacred groves show significantly higher levels of forest canopy retention than communities that have allowed sacred grove rules to weaken under evangelical Christian influence. Onyekwere and Anyanwu (2024) document analogous patterns across Igbo communities in southeastern Nigeria, where sacred groves associated with earth deity Ala continue to shelter plant species no longer found in adjacent farmland. Adeniji et al. (2025) similarly found that in Yoruba communities of Ogun State, groves linked to the Oro deity retained between 40 and 65 percent more tree basal area than comparable unprotected forest fragments. These findings carry a direct implication for Africa's commitments under the Kunming-Montreal Global Biodiversity Framework, which set a target of conserving thirty percent of land and sea areas by 2030, a target that African countries cannot realistically meet without counting and formally integrating the conservation work that sacred groves are already performing.

This paper takes that implication seriously. It argues that sacred groves are not merely biodiversity-rich patches but fully functional indigenous conservation systems, complete with ecological logic, governance structure, enforcement mechanism and adaptive management process. It proceeds by stating its method, clarifying key concepts, examining the ecological evidence for sacred grove conservation outcomes, analysing the cosmological and governance architecture that produces those

outcomes, assessing the threats that are dismantling that architecture, and engaging the policy debates about how formal conservation frameworks should respond.

Methodology

This paper employs a historical and hermeneutical analytical method. The historical dimension is necessary because sacred groves are not static features of the landscape. They are institutions with traceable histories of establishment, governance change, contestation and occasional revival, and understanding their conservation effectiveness requires reading them historically rather than treating them as timeless cultural artefacts (Ekpe et al., 2024). The hermeneutical dimension is equally necessary because the primary mechanisms through which sacred groves function, religious belief, cosmological narrative, taboo, and ancestral authority, are textual and interpretive in nature, requiring the researcher to read community practices and oral tradition for their embedded regulatory logic rather than reducing them to measurable variables alone.

The method is not anti-empirical. Where ecological measurement data exist in the recent literature, this paper engages them directly, including species richness counts, canopy cover assessments and water yield comparisons. However, the paper insists that ecological data alone cannot explain why sacred groves work, because the same forest patch, identical in its botanical composition, will be conserved in one community and cleared in another depending on whether the cosmological and governance architecture that produces compliance with conservation rules is intact or has been eroded. Explaining the difference requires historical and hermeneutical reading. This combination of methods follows the approach established in recent interdisciplinary sacred grove scholarship, including Sinu et al. (2024) and Ntiamoa-Baidu et al. (2024), who call explicitly for methods that integrate ecological and cultural analysis. Sources are limited to material published in peer-reviewed journals and reputable institutional outlets between 2024 and 2026, prioritising African-based case studies while drawing on comparative literature from South Asia where the sacred grove literature is most developed.

Conceptual Clarification

Sacred Groves are patches of land, typically forested but sometimes comprising wetland, grassland or riparian vegetation, that a community designates as sacred and protects through a combination of religious belief, customary law and taboo. They are found across Africa, South and Southeast Asia and parts of Latin America and Europe, and they have been described in the literature variously as the oldest form of nature reserve, as community conserved areas and as biocultural landscapes. In the African context, sacred groves are inseparable from African Traditional Religion because their protection is typically justified through reference to a resident deity, ancestral spirit or cosmological power whose authority underwrites the prohibition on clearing or exploitation (Onyekwere & Anyanwu, 2024). Zwane and Mthembu (2025) further note that sacred groves serve as living archives of pre-colonial land management knowledge, embedding centuries of ecological observation within cosmological form.

Biodiversity Conservation is the practice of protecting the variety of life, including genes, species and ecosystems, from loss caused by human activity or environmental change. In formal policy contexts, it is governed by the Convention on Biological Diversity and implemented through protected area networks, species-specific legislation and restoration programmes. This paper uses the term broadly, consistent with its use in the sacred grove literature, to include any practice that demonstrably slows or reverses the loss of species, habitat structure or ecological function, whether or not that practice is formally recognised in state conservation policy (Boafo et al., 2024).

Indigenous Knowledge Systems refer to the bodies of knowledge, practice and belief developed by local and indigenous communities through sustained interaction with their environments over generations. They are distinguished from formal scientific knowledge not by lesser rigour but by their

transmission modalities, oral, embodied and community-held rather than written and institutionally mediated, and by their integration of ecological observation with social and cosmological meaning (Coulibaly-Lingani et al., 2024). Mensah and Asante (2024) argue that the failure of formal conservation institutions to engage indigenous knowledge systems is not simply a cultural oversight but a structural governance error with measurable ecological costs.

Taboo in the context of sacred grove governance refers to a religiously or cosmologically sanctioned prohibition whose violation is understood to attract spiritual sanction, ecological misfortune or community punishment. Taboos around sacred groves typically prohibit tree felling, agricultural cultivation, hunting, extraction of timber, soil or water, and entry by uninitiated persons. Their conservation effectiveness depends on the credibility of the belief system that underwrites them, which is why sacred grove loss tracks closely with the erosion of traditional religious authority (Amoah et al., 2025).

Biocultural Landscape is a concept from landscape ecology and conservation anthropology that describes landscapes shaped simultaneously by ecological processes and cultural practices, in which the two are so intertwined that conservation of biodiversity requires conservation of the cultural system that produced and maintains it. Sacred groves are the archetype of a biocultural landscape because their ecological richness is a direct outcome of their cultural protection, and their cultural integrity depends on the ecological services, water, medicine, spiritual presence, that the grove provides to the community (Ntiama-Baidu et al., 2024).

The Kunming-Montreal Global Biodiversity Framework is the international biodiversity agreement adopted in December 2022 to succeed the Aichi Biodiversity Targets. Its headline goal, known as the 30x30 target, commits signatory governments to effectively conserving at least thirty percent of land, inland waters, coastal areas and oceans by 2030, with specific provisions for recognising the role of indigenous peoples and local communities in achieving that target (CBD Secretariat, 2024).

Sacred Groves as Functional Biodiversity Reserves: What the Ecological Evidence Shows

The ecological case for sacred groves as conservation institutions is now substantial and growing. Sinu et al. (2024), in a comparative analysis of sacred groves across the West African forest zone, found that grove patches between one and fifty hectares in size consistently hosted higher tree species richness than structurally comparable non-sacred forest patches in the same landscape. More significantly, the study found that groves maintained interior forest microclimate conditions, including canopy closure, humidity and temperature stability, that supported specialist forest organisms unable to persist in open or disturbed habitats. These are not marginal benefits. In a landscape where primary forest cover has been reduced to fragments, sacred groves function as stepping stones that maintain connectivity for forest-dependent species, including birds, bats, primates and understory insects that would otherwise be unable to move through the matrix of farmland between forest patches.

Boafo et al. (2024) extend this picture with a detailed study of sacred groves in the Volta Basin of Ghana and Togo, demonstrating that groves located along watercourses maintain riparian vegetation that reduces siltation, stabilises stream banks and sustains dry-season flow. This is a hydrological finding with direct human welfare implications. Communities near intact sacred groves reported more reliable access to clean water for domestic use and small-scale irrigation, which is precisely the ecosystem service attribution that conservation economists argue should be central to the economic case for biodiversity protection. The riparian groves in this study were protected not by state designation but by local belief that the water deity residing in the grove would punish any household that violated its boundaries. The conservation outcome was real, measurable and sustained across multiple generations without a single ranger, monitoring programme or enforcement budget.

In Nigeria, Onyekwere and Anyanwu (2024) conducted plant diversity assessments across twenty sacred groves in Igbo-speaking communities in Enugu, Anambra and Imo States, documenting a total of 312 vascular plant species, of which 47 were not found in any adjacent habitat type. Of those 47 species, 12 were identified as having significant medicinal, ritual or nutritional value to local communities, and 8 were categorised as threatened or near-threatened on the IUCN Red List. Sacred groves in this study were functioning as last-refuge habitats for species that farming, logging and urban expansion had eliminated everywhere else in the same landscape. This finding alone makes the policy case for integrating sacred groves into Nigeria's formal biodiversity conservation architecture, yet the National Biodiversity Strategy and Action Plan has yet to develop a mechanism for recognising, let alone protecting, community-managed sacred groves.

Adeniji et al. (2025) contribute a significant comparative dimension by studying 32 sacred groves across three Yoruba states in southwestern Nigeria. Their findings confirm and extend the southeastern Nigeria picture: groves associated with Osun, Ogun and Shango worship showed consistently higher vertebrate species diversity and lower rates of invasive plant establishment than adjacent community forests under no formal protection. The authors also found that grove size alone did not predict biodiversity outcomes. A small, intensively managed and cosmologically active grove outperformed a larger but governance-weakened site in nearly every biodiversity metric. This finding directly challenges the area-based conservation logic that dominates formal protected area planning, which assumes that larger is always better.

Amoah et al. (2025) contribute a critical methodological advance by comparing biodiversity outcomes not simply between sacred and non-sacred sites but between communities with different levels of traditional religious authority maintenance. Their findings are instructive. Communities in which traditional priests and elders retained active authority over sacred grove management showed canopy retention rates 34 percentage points higher than communities in which that authority had been displaced by evangelical Christian conversion or was contested between traditional and church authorities. This is the key finding that the purely ecological literature struggles to explain, because it shows that the conservation outcome is not simply a function of forest patch size or isolation but of the integrity of the governance system that enforces protection. A sacred grove whose cosmological authority has been delegitimised is a grove that will be cleared within a generation, regardless of its ecological richness.

Mensah and Asante (2024) add a pollinator dimension that has been underrepresented in the sacred grove literature. Their study of sacred groves in Ghana's forest-savanna transition zone found that groves supported bee and butterfly species assemblages significantly richer than surrounding agricultural land, including species critical for the pollination of local food crops. The authors calculated that maintaining sacred grove pollinator populations provided an economic service to surrounding farms worth approximately USD 340 per hectare per year in pollination function alone, a conservative figure that did not include water, timber, medicine or cultural services. Putting an economic figure on sacred grove ecosystem services of this kind has become an important strategy for making the conservation case in policy environments that respond primarily to economic argument.

Taken together, these studies establish three things clearly. First, sacred groves deliver genuine, measurable biodiversity conservation outcomes that are not produced by non-sacred forest patches of comparable size in the same landscape. Second, those outcomes extend beyond species richness to include hydrological regulation, microclimate maintenance and connectivity functions that benefit both biodiversity and human communities. Third, and most importantly for this paper's argument, the conservation outcomes are causally linked to the governance architecture, specifically the cosmological and social authority of traditional religious institutions, that enforces protection. Remove the governance architecture and the conservation outcome disappears. This means sacred

groves cannot be understood, protected or replicated by treating them as simply forest patches. They are governance systems as much as they are ecosystems.

The Cosmological and Governance Architecture of Sacred Grove Protection

Understanding why sacred groves work requires going inside the cosmological logic that makes taboo credible and community compliance achievable. Across African Traditional Religion, the authority that protects a sacred grove is not a regulation issued by a government ministry. It is the presence of a deity, ancestor or spiritual power whose capacity to enforce the prohibition is believed to be direct, immediate and personally consequential to any violator. Ekpe et al. (2024), in a study of sacred grove governance among Efik and Ibibio communities in Cross River and Akwa Ibom States of Nigeria, document in precise ethnographic detail how the ritual specialists responsible for grove management mediate between the community and the spiritual power believed to reside in the grove. Their authority to admit, exclude, permit or forbid is not bureaucratic. It is cosmological, and it commands compliance because the community's belief system associates violation with illness, crop failure, infertility and death, consequences understood as the grove's own response to trespass.

This cosmological authority is embedded in a governance structure that has several functional parallels to what contemporary conservation policy calls adaptive management. Coulibaly-Lingani et al. (2024), studying sacred groves in Burkina Faso and Côte d'Ivoire, found that traditional sacred grove governance systems regularly adjusted extraction rules, including periodic relaxation of prohibitions on medicinal plant collection for specific ceremonial uses, based on community deliberation mediated by ritual specialists. This is adaptive management in practice: specific and contextual rule adjustment based on community observation of resource conditions, achieved without written management plans, ecological monitoring contracts or external advisors. The mechanism of adaptation is ritual consultation, in which the community asks its spiritual authority whether a specific use is permissible under current conditions and receives an answer that is binding and publicly verifiable through ceremonial process.

The governance architecture also includes intergenerational transmission mechanisms that ensure rules are not lost between generations. Ntiemoa-Baidu et al. (2024), examining sacred grove governance across Ghana's Ashanti and Brong-Ahafo regions, document how initiation processes, oral narrative, naming practices and annual ceremonies performed at the grove's boundary serve simultaneously as ecological education and as governance renewal. Young community members learn which species within the grove are protected, which pathways may be used, which seasonal prohibitions apply, and what consequences follow violation, not through formal instruction but through participation in ritual practice. This is a highly effective knowledge transmission system, because it associates ecological rules with the deepest layers of community identity and cosmological commitment rather than with external regulatory authority that can be contested or ignored.

Zwane and Mthembu (2025), writing about sacred grove governance in KwaZulu-Natal and extending their analysis comparatively to West African systems, make an important point that the literature has often missed. They argue that the governance architecture of sacred groves is not merely traditional but is actively renegotiated within communities as conditions change. In cases they document, communities have expanded grove boundaries in response to observed watershed stress, reclassified some species from prohibited to medicinally accessible in response to public health needs, and in at least two instances formally incorporated Christian prayer into grove boundary ceremonies as a way of maintaining community-wide legitimacy for the protection regime in communities where church membership had grown. This is not the static, timeless traditionalism that colonial conservation discourse attributed to African land management. It is dynamic, responsive and politically sophisticated governance.

Equally important is the social enforcement structure that complements cosmological sanction. Osei et al. (2025), studying sacred grove governance in the Northern Region of Ghana, found that communities maintained active social monitoring of grove boundaries through the networks of households whose farmland bordered the grove. These households had both practical incentive and cosmological obligation to report and contest any violation, because they were understood to share in the spiritual consequence of any breach that went unchallenged. This is a distributed monitoring system with zero additional cost to the community, because the monitoring is embedded in the ordinary social relationships and cosmological commitments of households who happen to live near the grove. The governance architecture is therefore not primitive or informal in the pejorative sense. It is sophisticated, multilayered, intergenerationally maintained, cosmologically enforced and socially embedded.

Threats to Sacred Groves: Deforestation, Conversion and the Governance Deficit

Sacred groves across Africa are under severe and accelerating pressure from multiple directions, and the literature published between 2024 and 2026 is unambiguous about the severity of that pressure. Amoah et al. (2025) estimate that Ghana alone has lost approximately 60 percent of its documented sacred grove area since 1990, with the rate of loss accelerating since 2010. Onyekwere and Anyanwu (2024) report comparable losses in southeastern Nigeria, where urbanisation pressure, agricultural expansion and infrastructure development, particularly road construction and housing estate development in peri-urban zones, have consumed grove land that was protected by taboo for centuries. These are not isolated case studies. They reflect a continental pattern driven by interlocking forces that operate simultaneously at the ecological, social and institutional level.

The most widely documented threat in the recent literature is the erosion of traditional religious authority, particularly through evangelical and Pentecostal Christian conversion. Amoah et al. (2025) are direct in their findings: in communities where Pentecostal church membership had grown to encompass more than 50 percent of households, sacred grove taboos were explicitly contested as spiritually dangerous, because the theology of Pentecostalism frames traditional spirits as demonic rather than legitimate, which removes the cosmological basis for compliance with grove protection rules. When a community no longer believes that the deity of the grove has the power to punish violators, the practical deterrent effect of the taboo disappears, and clearance follows rapidly. This is not an argument against religious freedom or against Christianity's legitimate place in African religious life. It is an observation about the mechanism through which sacred grove governance works and what happens when that mechanism is disrupted.

Agricultural and population pressure constitutes a second major threat. Coulibaly-Lingani et al. (2024), studying sacred groves in Burkina Faso, document cases in which community elders who remained committed to grove protection were simply unable to prevent encroachment because younger household members with insufficient land for subsistence agriculture were clearing grove edges for cultivation. Food insecurity overrides cosmological deference when households face genuine hunger, and blaming communities for clearing sacred groves without addressing the land tenure, agricultural support and food system conditions that make clearance a rational choice is both analytically dishonest and practically useless. Mensah and Asante (2024) reinforce this point, arguing that payments for ecosystem services mechanisms designed to compensate grove-adjacent households for forgone agricultural income represent one of the most direct and practically testable policy tools available for reducing agricultural encroachment pressure.

A third threat is what Ekpe et al. (2024) describe as the governance succession crisis, the failure of communities to reproduce traditional specialists capable of maintaining sacred grove authority across generations. Where the knowledge required to perform grove rituals, manage cosmological relationships with resident spirits and mediate community rule-making about grove use is held by a small number of elderly specialists with few or no trained successors, grove governance becomes

fragile and may collapse entirely upon the death of key knowledge holders. Zwane and Mthembu (2025) document several cases in South Africa and comparative West African contexts where this succession failure has already occurred, reducing previously protected groves to open-access resources cleared within five years of the death of the last active custodian.

The institutional gap in formal conservation policy is the fourth and arguably most tractable threat. Boafo et al. (2024) demonstrate that in Ghana, Togo and Benin, national biodiversity legislation does not contain any provision specifically recognising sacred groves as a protected area category, which means they receive none of the legal protection against conversion, no compensation mechanism for community custodians, and no inclusion in national biodiversity accounting systems. Nigeria's National Park Service Act and its Endangered Species Act similarly make no reference to community-managed sacred sites. This means sacred groves can be legally destroyed, their land converted to other uses, and their biodiversity lost, without any formal conservation assessment requirement or community consultation obligation. Closing this institutional gap is the most direct policy intervention available to African governments committed to the Kunming-Montreal 30x30 target, and it is the intervention that the recent literature most consistently recommends (CBD Secretariat, 2024; Ntiamoa-Baidu et al., 2024).

Sacred Groves and the 30x30 Target: Joining the Policy Debate

The Kunming-Montreal Global Biodiversity Framework's 30x30 target is the most ambitious biodiversity commitment Africa has signed since the Convention on Biological Diversity itself. It requires African governments to demonstrate that at least 30 percent of their land area is effectively conserved by 2030. Most African countries are nowhere close to that figure when only formally gazetted protected areas are counted. Nigeria's gazetted protected area system covers approximately 4 percent of its land area, and the quality of protection within that system is widely contested (Onyekwere & Anyanwu, 2024). If sacred groves were formally counted, the picture would look very different in many countries. Ntiamoa-Baidu et al. (2024) estimate that Ghana's remaining sacred groves, even after decades of loss, cover a total area comparable to a significant fraction of its formal reserve network, and in some regions exceed it in biodiversity quality.

The CBD Secretariat (2024) published guidance on "Other Effective Area-Based Conservation Measures," known as OECMs, as part of the implementation framework for the Kunming-Montreal targets. OECMs are areas outside formal protected area networks that are being effectively governed and managed to achieve positive outcomes for biodiversity. Sacred groves fit the OECM definition precisely: they are community governed, biodiversity rich, maintained through customary rule, and demonstrably effective at in-situ conservation. Recognising African sacred groves as OECMs would allow them to count toward national 30x30 commitments without requiring the state to assume management control, which is both practical and appropriate given that state management has historically been less effective at sacred grove protection than community governance.

However, there are important debates in the literature about whether OECM recognition is genuinely beneficial for communities or whether it carries risks of what conservation anthropologists call green grabbing, the process by which formal recognition of conservation value leads to external actors seeking to capture control of the recognised area under the guise of supporting conservation (Osei et al., 2025). The risk is real and documented. In several documented cases from Ghana and Kenya, community-managed conservation areas that gained formal recognition subsequently found themselves subject to external management requirements and in some cases forced relocation of households that had previously co-existed sustainably with the protected area. Sacred grove communities have good reason to be cautious about formal recognition if that recognition comes with conditions that erode rather than reinforce community authority.

The resolution of this tension lies in governance design rather than in a blanket argument for or against formal recognition. Sinu et al. (2024) argue for community-led OECM designation, a process in which communities themselves define the boundaries, rules and management authority of the recognised area, with formal state and international recognition serving only to confer legal protection against conversion and to channel support resources without attaching governance conditions. This is consistent with the Kunming-Montreal Framework's own language about recognising the rights of indigenous peoples and local communities. Adeniji et al. (2025) add a complementary argument, proposing that Nigeria's National Council on Climate Change and Biodiversity develop a specific sacred grove registry modelled on Kenya's community land registration system, which would provide legal tenure security to grove-holding communities without transferring management authority to state agencies. Making such a pathway operational in African national legal systems is the concrete policy challenge that the literature identifies but that no African government has yet fully resolved.

Nigeria, as Africa's most populous country and one of its most biodiverse, is a critical test case. Ekpe et al. (2024) and Onyekwere and Anyanwu (2024) both call on the Nigerian federal government to amend the National Park Service Act to include a community conserved area category under which sacred groves can be formally recognised, with traditional institutions rather than the National Park Service holding primary governance authority. A complementary amendment to the Land Use Act, which currently vests all land in state governors and creates perpetual tenure insecurity for community-managed groves, would close the land tenure gap that makes sacred grove land legally available for conversion.

Findings

Four findings emerge from this historical and hermeneutical analysis. First, sacred groves across Sub-Saharan Africa deliver measurable, empirically documented biodiversity conservation outcomes, including elevated species richness, microclimate regulation, hydrological maintenance and connectivity function, that make them functionally equivalent to formally gazetted reserves in many landscape contexts, and in some cases superior in biodiversity quality (Sinu et al., 2024; Boafo et al., 2024; Onyekwere & Anyanwu, 2024; Adeniji et al., 2025). Second, those outcomes are causally dependent on the integrity of the cosmological and governance architecture, consisting of traditional religious authority, ritual specialists, taboo systems and intergenerational knowledge transmission, that enforces and sustains protection. Sacred groves cannot be treated as merely biological resources because separating the ecology from the governance system that produced it is the surest way to lose both (Ekpe et al., 2024; Amoah et al., 2025; Zwane & Mthembu, 2025). Third, sacred groves face a convergence of threats, including religious conversion, agricultural pressure, urban expansion, governance succession failure and institutional invisibility in formal conservation law, that are already producing documented and significant biodiversity loss (Coulibaly-Lingani et al., 2024; Amoah et al., 2025). Fourth, the policy tools to address these threats exist, including OECM recognition under the Kunming-Montreal Framework, community-led designation processes, legislative amendment and targeted support for traditional governance institutions, but they have not yet been implemented at the scale or with the community-governance sensitivity required to be effective (CBD Secretariat, 2024; Ntiama-Baidu et al., 2024; Mensah & Asante, 2024).

Conclusion

Sacred groves are not relics of pre-colonial Africa waiting to be modernised out of existence. They are functional, multi-generationally maintained, ecologically effective indigenous conservation systems whose performance in protecting biodiversity is documented, reproducible and directly relevant to Africa's most urgent contemporary conservation challenges. The evidence reviewed in this paper shows unequivocally that sacred groves work when their governance architecture is intact, and that they fail when that architecture is eroded by religious conversion, economic pressure or institutional neglect. The policy implication is equally clear: formal biodiversity conservation frameworks in Africa must move from tolerating sacred groves as marginal or informal contributors

to biodiversity protection and begin actively recognising them as primary conservation institutions whose governance model deserves legal protection, resource support and integration into national biodiversity accounting systems. The Kunming-Montreal Framework's 30x30 target gives African governments both the mandate and the political opportunity to make that shift. What is needed now is the political will to do so, grounded in the recognition that indigenous systems of biodiversity conservation are not a second-best option. In many African landscapes, they are the best option available.

Recommendations

1. African governments, starting with Nigeria, Ghana, Burkina Faso and Kenya, should amend national biodiversity and land tenure legislation to create a formal community conserved area category under which sacred groves can be designated with full community governance authority, legal protection against conversion, and inclusion in national biodiversity accounts toward the Kunming-Montreal 30x30 target.
2. The Convention on Biological Diversity Secretariat should develop Africa-specific OECM recognition guidelines that embed community-led designation principles and explicitly prohibit management conditions that transfer governance authority from traditional institutions to state agencies or international organisations.
3. National biodiversity research programmes and university departments of ecology, environmental science and African studies should conduct systematic sacred grove inventories in partnership with traditional institutions, documenting biodiversity values, governance structures and threat status as an integrated dataset rather than as separate biological and cultural assessments.
4. Traditional institution support programmes, at both government and non-governmental organisation level, should include specific provision for training and recognising sacred grove custodians, ritual specialists and community grove managers, including economic incentives comparable to what formal protected area staff receive, to address the governance succession crisis identified in the literature.
5. Religious organisations, particularly evangelical and Pentecostal church bodies operating in rural African communities, should be engaged in structured dialogue about sacred grove conservation, not to reverse theological commitments but to develop conservation theology frameworks that allow Christian communities to maintain or restore grove protection without experiencing a conflict between faith and environmental stewardship.
6. Carbon market and payment for ecosystem services schemes operating in Africa should develop specific protocols for recognising sacred groves as eligible sites, with benefit-sharing arrangements that flow directly to traditional institutions and community grove management bodies rather than to intermediary organisations or national governments.
7. The African Union's Great Green Wall Initiative and other continental landscape restoration programmes should formally incorporate sacred grove protection and restoration into their implementation frameworks, recognising that community-managed sacred sites are the most cost-effective large-scale biodiversity conservation infrastructure available to African governments.

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