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Shifting values and the fate of sacred forests in Guinea-Bissau: are community-managed forests the answer?

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Sacred forests often comprise the last remaining native patches in the landscape, making them especially important reserves of natural resources for both local communities and biodiversity. However, changes in cultural values together with the pressing need to expand productive lands weaken the motivation to continue protecting once-sacred forests. In this Commentary, we propose an alternative strategy for the conservation of these forests, consisting of the implementation of community-managed forests (CMFs). We illustrate this strategy with the case of a project undertaken in northern Guinea-Bissau by a regional non-governmental organization. We further discuss the need for non-governmental efforts to be aligned with governmental ones for effective CMFs.

Many cultures around the world are motivated to protect particular areas as sacred sites as a consequence of their complex social–spiritual associations with deities and/or spirits of ancestors (Bhagwat & Rutte 2006, Dudley et al. 2012). These sacred spaces occur in many different forms, such as old-growth forest remnants and burial grounds, and they are used for a wide variety of spiritual/religious purposes (Lebbie & Freudenberger 1996). In addition to their cultural value, sacred forests often contain valuable reserves of natural resources (e.g., water, protein and timber; Sheppard 2021, Yami & Mekuria 2022). Given their typically low levels of human disturbance (Daye & Healey 2015, Bremer & Young 2021), these forests often host higher species diversity than nearby non-sacred forests (Khan et al. 2008, Soumah 2018). Moreover, due to their special cultural significance, they are frequently the last remaining natural patches in an anthropogenic landscape, making them potentially important biodiversity refuges that safeguard some species from extirpation (Mgumia & Oba 2003).

Notwithstanding the high socio-ecological value of sacred forests, their long-term persistence in some parts of the world is at risk due to shifts in spiritual beliefs and traditional values, exacerbated by human population growth and the pressing need to expand productive lands (Khumbongmayum et al. 2004, Soumah 2018). Changes in cultural values can weaken the motivation to continue protecting once-sacred forests, which consequently become degraded and eventually disappear (Khan et al. 2008, Bhatia et al. 2017). One of the most rapid and widespread changes to traditional beliefs is caused by the adoption of new religious frameworks (typically global monotheistic religions), with associated value shifts that can redefine a community's relationship with its local environment, as for example in Malaysia (Appell 2005). Shifting cultural values can be further accelerated by demographic changes (e.g., age and migrant status), as younger people can be more likely to stop following traditional practices and immigrants are often less likely to share the same beliefs as locals. Synergies between religion, age and migrant status have been found to drive the degradation of once-sacred forests in Zimbabwe (Byers et al. 2001), Ghana and Liberia (Sheppard 2021).

The consequences of degrading and losing sacred forests are complex, with short-term economic gains often unequally shared among local communities. Moreover, these gains are traded off against the loss of biodiversity and associated ecosystem services. For instance, as sacred forests are often associated with freshwater springs, the disturbance of these forests may affect the hydrological cycle and thus water provision for local communities (Hakim et al. 2023). Changes in behaviour that promote the disturbance of sacred forests are also likely to disrupt the traditional social organization of local communities (Appell 2005, Khan et al. 2008).

In a rapidly changing landscape of cultural beliefs, conservation initiatives that retain high levels of local motivation for protecting forests that recently lost their sacred character need to be urgently implemented (Langston et al. 2017, Ballullaya et al. 2019). One such option consists of CMFs, which comprise the fastest-growing category of tropical protected areas (PAs) (Schmitt et al. 2009). These informal PAs are a promising conservation alternative to protecting desacralized forests, and they may also allow for the collective empowerment and welfare of local communities (Lele et al. 2010). Tropical CMFs have lower and less variable annual deforestation rates than other types of PAs (Bray et al. 2003, Porter-Bolland et al. 2012), harbour higher

species diversity (de Souza et al. 2016, but see Terborgh & Peres 2017) and maintain basic ecosystem functions (Rajasri et al. 2017).

Yet this type of designation is not without challenges. Forest resources within CMFs can still be overexploited if multiple local stakeholders are uncoordinated or uncooperative (Ostrom 2015). For instance, in Nepal detrimental practices such as the removal of unwanted species, elite dominance in decision-making and traditional knowledge depletion are common in CMFs, and these are likely to impact the delivery of ecosystem services (Shrestha et al. 2010). Other potential weaknesses of CMFs include the frequent lack of governance systems in which local entities are granted land tenure rights (Lele et al. 2010, Porter-Bolland et al. 2012). Decentralization of natural resources management, namely transfer of the responsibility for resource management from central to local government, organizations or communities (Rondinelli et al. 1989), is the strategy that is most able to ensure equity and transparency in the delivery of public services (Ostrom 2015). For instance, in indigenous territories with secure tenure in the Brazilian Amazon, deforestation decreased and secondary forest increased on previously deforested areas (Baragwanath et al. 2023). Decentralization of natural resources is becoming a policy tool for several developing countries worldwide (Turyahabwe et al. 2007, Yami & Mekuria 2022). Yet the overall social, environmental and economic aspects of community forest management remain greatly understudied (Casse & Milhøj 2013, Burivalova et al. 2017).

The case of Guinea-Bissau

The environmental impacts of changes in traditional beliefs can be clearly seen in Guinea-Bissau (West Africa), where, in 1975, the population of over 750 000 from more than 20 ethnic groups was broadly divided between traditional animists (51.0% of the population), Christians (10.6%) and Muslims (30.3%; Countryeconomy.com 2023). However, by 2020, the population had almost tripled (to just over 2 million), and the proportion of Bissau-Guineans adopting animist practices had dramatically declined (30.3%), contrasting with Christian and Islamic communities (65.3% combined; Pew-Templeton Global Religious Futures Project 2020). In traditional animist beliefs, the spiritual and physical worlds are not clearly distinguished, and animals, plants and other entities of the natural environment have souls/spirits as well as humans. Bissau-Guineans of different ethnic groups traditionally protected certain forests considered to be home to local deities. These were widely distributed across the country, and their socio-ecological importance was widely recognized (e.g., Said et al. 2011, Kühnert et al. 2019). Moving from animistic to monotheistic beliefs has entailed a corresponding loss of forest sacredness. For example, the size of sacred forests in the region of Cantanhez National Park (south-western Guinea-Bissau) declined following the conversion of the native Nalus to Islam, as this encouraged rejection of long-standing ritual practices related to environmental protection, which they also attributed to the theft of the resident '*irãs*' (deities) by the 'white man' that opened access to the resources in these forests (Temudo 2012).

Interestingly, some ethnic groups that converted to Islam retain practices linked to local spirits and ancestors (Salvaterra 2017). For example, in the Boé region, where Islam is the primary religion, some animistic practices are still observed; these traditional systems elsewhere tend to be diluted and replaced by the mainstream faiths (Ramachandra 2017). Islam is forecast to continue expanding in Guinea-Bissau over the decades ahead (Pew-Templeton Global Religious Futures Project 2020). Immigration may further contribute to this, with approximately half of the immigrants in the country coming from the Republic of Guinea (Conakry), where Islam is the dominant religion (DN 2017). Tensions over the rules of access to natural resources between the older generation and the more Islamized, individualistic and cash-orientated youth are therefore likely to increase (Temudo 2012).

Natural forests are being converted to the main cash crop of cashew at an unprecedent rate in Guinea-Bissau (Temudo & Abrantes 2014), and the window for conservation action is closing rapidly. Protecting once-sacred forests through more protectionist conservation tools (e.g., formal PAs) is challenging, since new PAs can be perceived as reducing rights and offering few benefits (Temudo 2012), and the implementation of official policies has also been linked to the loss of local forms of ecosystem protection (Brandt et al. 2015).

In the Oio region (northern Guinea-Bissau), 20 CMFs have now been implemented for 15 years by the Kafo peasant federation, a regional non-governmental organization. In these forests, participating local communities are engaged in several sustainable practices and natural resource uses based on traditional knowledge. Kafo further promotes the marketing of certain natural products derived from the CMFs (e.g., honey and juices) and seeks to expand this system by implementing additional CMFs in the region. Yet making these CMFs effective as both a reserve of raw resources for local communities and an area for conserving biodiversity is not trivial, and mechanisms to improve the governance of these forests are urgently needed (Yami & Mekuria 2022). The tenuous and incomplete nature of rights is probably the biggest constraint to achieving effective governance (Lele et al. 2010). In Guinea-Bissau, this is illustrated by the conceived logging permissions that result in the physical depletion and biological degradation of the national forest heritage, without strict compliance with the forestry law (S. Seck, personal observation 2022). Such degradation is exacerbated by international market demand for high-value commercial trees, such as the kosso (*Pterocarpus erinaceus*). The logging of these trees is sometimes seen as unavoidable by local communities, who are thus incentivized to harvest them before outsiders do (S. Seck, personal observation 2022). The negative interference of some authorities and the urban elite in the decision-making processes of forest management can further compromise the willingness of rural communities to engage in collective action (Yami & Mekuria 2022). Therefore, to effectively implement CMFs, action is needed to: (1) quantify the distribution, size and vulnerability of sacred or until recently sacred forests in the country, along with the characteristics of the local communities underlying paradigm shifts (e.g., religion, age and immigration status); (2) demonstrate the socio-ecological value of these forests, further identifying the best management practices to maximize both biodiversity and ecosystem services; and (3) incorporate new legislation empowering local communities with land tenure rights. Efforts in this direction have recently started in the Boé region, where 179 sacred sites were mapped across 29 villages and are now registered as Indigenous and Community Conserved Areas in the World Database on Protected Areas (Chimbo 2022).

Conclusions

Given that sacred or once-sacred forests represent a considerable part of the remaining natural habitats across West Africa (Fairhead & Leach 2003), ensuring their protection will be

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essential to meeting the targets of COP27 (United Nations 2022). In our opinion, rapid implementation of effective community-based management practices for these forest remnants may be the only hope for conserving their biodiversity while also supporting the collective empowerment and welfare of the communities who depend on them.

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