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PRACTICE INSIGHTS

Bridging the conservation and development trade-off? A working landscape critique of a conservancy in the Maasai Mara

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Abstract

1. The recent call to halt biodiversity loss by protecting half the planet has been hotly contested because of the extent to which people might be excluded from these landscapes. It is clear that incorporating landscapes that implicitly work for indigenous people is vital to achieving any sustainable targets.
2. We examine an attempt to balance the trade-offs between conservation and development in Enonkishu Conservancy in the Maasai Mara, using a working landscape approach. Mobile livestock production strategies are theoretically consistent with wildlife-based activities and can present a win-win solution for both conservation and development. We explore the success and failings of Enonkishu's evolving attempts to achieve this: addressing the criticism of the conservation sector that it fails to learn from its mistakes.
3. We found that Enonkishu has had considerable positive conservation outcomes, preventing the continued encroachment of farmland and maintaining and improving rangeland health relative to the surrounding area, while maintaining diverse and large populations of wildlife and livestock.
4. The learning from certain ventures that failed, particularly on livestock, has created institutions and governance that, while still evolving, are more robust and relevant for conservancy members, by being fluid and inclusive.
5. *Practical implication*: Diverse revenue streams (beyond tourism, including a residential estate, livestock venture and philanthropy) enabled Enonkishu to withstand the pressures of COVID-19. Livestock is crucial for defining the vision of the conservancy, and the institutions and governance that underpin it.

KEYWORDS
conservancy, conservation, Maasai Mara, pastoralism, working-landscape

1 | INTRODUCTION

There has been a recent, vociferous call to halt precipitous declines in biodiversity, ecosystem function and planetary health, by incorporating nearly half of the planet into the conservation agenda (Allan et al., 2019; Wilson, 2016). This call has been hotly contested because of the extent to which people are included or excluded from these landscapes (Schleicher et al., 2019). It is clear that incorporating landscapes that implicitly include and work for indigenous people, their livelihoods, their rights and their values is vital to achieving any sustainable targets (Büscher et al., 2017; Western et al., 2020; Worsdell et al., 2020).

Conservation has shifted towards a more decentralised, participatory, consensus approach since the 1980s under various labels: including community-based conservation (Western et al., 1994), co- management (Chase & Schusler, 2000) and collaborative resource management (Wondolleck & Yaffee, 2000). Decentralised conservation approaches are ill-defined, but generally aim to engender 'win-win' outcomes that balance environmental with socio-economic needs or conservation with development. Here, the term 'development' largely refers to 'livelihoods, making a living, meeting needs, coping with uncertainties, and responding to opportunities' (Berkes, 2007: 15189). The term 'sustainable development' which underpins the use of development since the late 1980, refers to the ability of development to meet the needs of the present without compromising the ability of future generations to meet their own needs (Robert et al., 2005). However many of these approaches that attempt to balance conservation and 'development' are effectively 'charades' due to their illusory nature, the lack of real reform and implementation on the ground (Ribot et al., 2006) and due to the depth of resistance to reform that exists from the state and globally (Nelson, 2009).

One such 'win-win' approach is that of 'working landscapes' (Arts et al., 2017; Kremen & Merenlender, 2018) which aims to tackle nations' joint commitments to both global biodiversity targets and the sustainable development goals (SDGs). Working landscapes are managed to complement biodiversity conservation goals while also contributing to producing food, materials, clean water and healthy soils and provide ecosystem services such as carbon storage (Kremen & Merenlender, 2018). Yet how can this be achieved with the trade-offs between conservation and 'development'?

In this paper, we examine one such attempt at balancing these trade-offs in Kenya's rangelands. Here livestock-wildlife interactions, outside of state protected areas, and the complex social-ecological systems in which they are embedded play a crucial role in biodiversity conservation. Kenya's wildlife numbers outside state protected areas have plummeted by over 70% in the last 50 years (Ogutu et al., 2016), yet this land is vital to the conservation of wildlife, biodiversity and ecosystem services (Tyrrell et al., 2020; Western et al., 2009).

Land outside Kenya's state protected areas faces four main challenges in terms of the trade-off between conservation and development. First is the historical focus of governments on protected areas from which people are actively excluded from the benefits derived from, and the governance of, landscapes (Adams & McShane, 1996; Brockington, 2002; Lindsey et al., 2020).

Second is the opportunity cost of cultivation to conservation. One of the largest challenges to conservation in Kenya is land use change, with a rapidly growing economy and population imposing large opportunity costs for maintaining land under conservation (Norton-Griffiths & Southey, 1995; Tyrrell et al., 2021). For landowners, with land under community, private or public tenure, the benefits of selling their land to speculators and/or converting their land for arable farming and urban development generally greatly outweigh the benefits of fostering wildlife-friendly landscapes.

Third, changes in livestock management driven by colonial and post-colonial policies and economic forces have led to wide scale reductions in grassland productivity (Mwangi & Ostrom, 2009a; Western et al., 2020, 2021) and have subsequently negatively impacted pastoral livelihoods (Boone et al., 2005; Homewood et al., 2009). Pastoralism and wildlife-based activities seemingly present a win-win solution to the conservation and development trade-off. Mobile pastoralist production strategies are theoretically consistent with wildlife-based activities (Homewood et al., 2012). Livestock and wild grazers depend on the same key resources, using mobility and migration strategies to maximise scattered and unpredictable grass and water. However, win-win conservation solutions that synergise pastoralism with wildlife have benefitted only a few pastoralist households, while conservation restrictions constrain production and coping strategies, undermining the potential for co-existence (Homewood et al., 2012).

Fourth, wide-scale fencing of land to demarcate ownership and to protect individual grazing resources (Løvschal et al., 2017; Weldemichel & Lein, 2019) has further jeopardised the long-term survival of wildlife and livestock, which both depend on mobility to reach scattered grazing and water (Reid et al., 2014; Western et al., 2020).

"Conservancies" are one strategy that has emerged to resolve the trade-off between conservation and development. In contrast to the rigid, exclusive approach of national parks (Brockington, 2002), conservancy members co-create their operation, benefit flow and livelihood and environmental goals (Lunstrum, 2014; Schetter et al., 2022). Communities co-create the conservancy's land use and can choose whether to live on the land (in a mixed conservation model) or not.

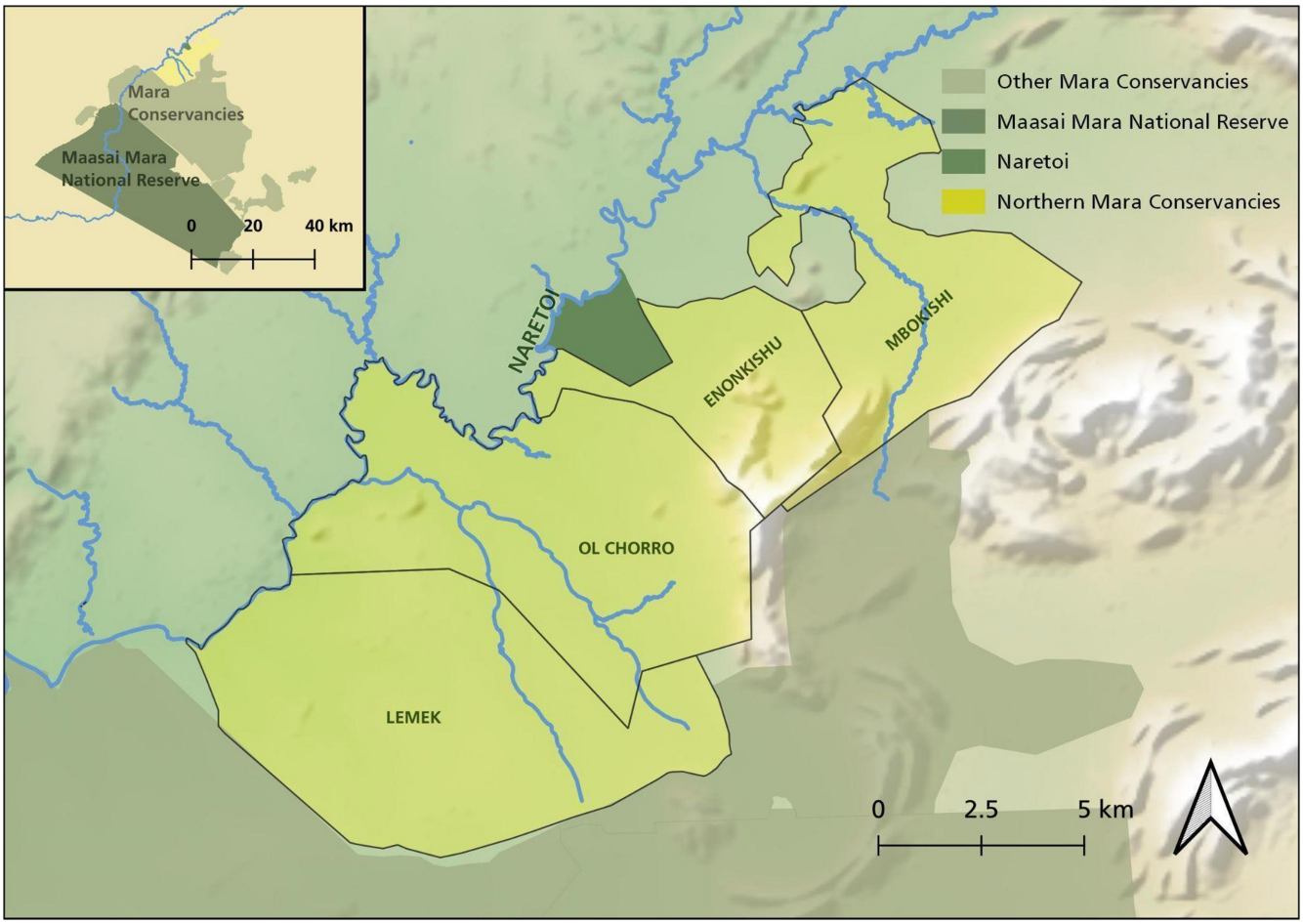

FIGURE 1 Naretoi estate in Enonkishu.

In Kenya, the number of conservancies has proliferated, from less than five in the early 1990s to over 160 in 2016, covering over 65,000 km^2 (KWCA, 2016). Kenyan national policies and legislation have devolved the right to manage and benefit from their wildlife resources to conservancies and landowners, in cooperation with national and regional governments (Western et al., 2015). Conservancies in Kenya do not follow one particular institutional model and have been set up iteratively without a clear legal or policy framework behind them (Bedelian, 2014). Conservancies also vary in their approach to balancing the conservation and development trade-off (Brockington, 2008) and there has been little documented about how conservancies navigate this balance.

In this paper, we address this gap. We focus on Enonkishu Conservancy in Kenya's Greater Maasai Mara ecosystem (Figure 1). We take a critical look at its establishment and social-ecological impact. We present these findings through two lenses. First through an exploration of project successes and failings. Conservation operates in a highly dynamic, diverse and complex world in which contexts change, often unexpectedly (Knight et al., 2019). The sector has been criticised for the lack of sharing and therefore learning from failures and attempts to evolve and improve (Godet & Devictor, 2018; Sutherland et al., 2004). Second, we look critically at how conservation interventions that attempt to balance the conservation-development trade-off have evolved on Enonkishu using a 'working landscape' approach.

2 | ENONKISHU CONSERVANCY AS 'A WORKING LANDSCAPE'

Kenya's Greater Maasai Mara is a hotspot of conservation with novel initiatives to redistribute tourist income with varying levels of success (Homewood et al., 2012). These attempts include more than 15 conservancies that surround the Maasai Mara National Reserve, covering 136,052 ha (almost the size of the reserve itself), comprising land belonging to 13,236 landowners (Bedelian, 2014).

Conservancies in the Mara were established out of former group ranch land. Group ranches were established by the government in the late 1960s with the expectation that they would provide tenure security thus creating incentives for pastoralists to invest in range improvement and reduce the tendency to accumulate livestock[1] (Grandin, 1968). However nearly all land is now sub-

[1]The 'Land Group Representatives and Land Adjudication Act' of 1968 enabled land to be demarcated into group ranches, which were owned and under private title by a group of registered members, and managed by an elected committee (Galaty & Munei, 1998; Rutten, 1992).

divided in the region, with pressure from members frustrated by the inefficiencies and inequalities of group ranch management committees. Individuals wanted better control of their own land, title deeds to secure individual loans and the envisaged opportunity of leasing pasture, cultivation or selling land (Galaty & Munei, 1998; Rutten, 1992). Government policy further drove land subdivision through demand for putting land to productive use, often influenced by the mindset that farmed land is 'productive' land and land under pastoral use is 'idle land' (Mwangi & Ostrom, 2009b; Rutten, 1992).

Enonkishu Conservancy comprises 2399 hectares owned by 32 landowners. It is situated on the northernmost point of the Greater Mara Ecosystem, next to Lemek, Ol Chorro Oiroua conservancies and the newly established Mbokishi conservancy, and a hard boundary that abuts cultivated land to the north and west (Figure 1). The western part of the Mara, where Enonkishu sits, receives more rainfall than in other parts of the Mara. Wetter rangelands are more productive and more resilient. The land that now comprises Enonkishu formed part of both Lemek group ranch and Olchorro Oiroua ranch that were established in the 1980s and 1960s respectively. In the late 1990s the group ranch began to subdivide—individual group ranch members gained title to smaller plots of approximately 100 acres per registered member. At this time Lemek and Ol Chorro conservancies were beginning to be established on former Lemek group ranch land (Figure 1) under the management of Koiyaki-Lemek Wildlife Trust and Olchorro Oiroua Wildlife Association. Meanwhile considerable areas of land were leased or sold by group ranch landowners. This included the 2000-acre Olerai Farm (Figure 1—Naretoi) by the Mara River that was intensively cultivated with central pivot irrigation systems and used for the production of seed maize and green beans for export.

Enonkishu provides a unique case study to use a 'working landscape approach' to examine a conservation intervention. This is firstly due to its vision of coexistence between livestock-based livelihoods and wildlife, and of "rewilding" former cultivated lands while overcoming the substantial opportunity costs of keeping wildlife. "Landscape approaches" have gained prominence in the search for solutions to reconcile the trade-offs between conservation and development (Sayer, 2009; Sayer et al., 2013). Reed et al. (2016, p. 2551), describe landscape approaches as "a framework to address the increasingly widespread and complex environmental, economic, social and political challenges that typically transcend traditional management boundaries." The Wageningen Centre for Development Innovation (CDI) with its partners from the global South, developed five landscape capacities for assessing and conceptualising landscape governance (Arts et al., 2017). We use the five landscape capacities to unpack Enonkishu as a working landscape.

2.1 | Thinking landscape

> The capacity to "think" landscape, not only to understand the natural-ecological characteristics of a landscape but also its sociocultural identity and sense of place
>
> (Arts et al., 2017, 42, p. 454)

The breakdown of Olchorro Oiroua Group Ranch resulted in several families being excluded from the emerging tourism benefit-sharing. The excluded families regrouped and invited Lemek group ranch members to join a vision to create the Enonkishu Conservancy. The vision of Enonkishu Conservancy was co-created by landowners and investors. In 2009, a meeting was held between the Wood family (owners of Olerai Farm) and 150 landowners owning around 10,000 ha of Lemek and Olchorro group ranch. They envisioned a new conservancy that would be a place of coexistence between wildlife and a traditional, livestock-based, pastoralist way of life, funded by a tourism product established by the Wood family.

Although the win-win solution between pastoralism and wildlife has been widely advocated and implemented, in many cases it has failed, in part because it has failed to align the goals of pastoralists and conservationists, particularly around the presence of livestock (Greiner, 2012; Noe & Kangalawe, 2015; Yurco, 2017). Instead conservation has generally created further costs for landowners via conservation-related restrictions, such as limiting pastoral residency and reducing access to grazing (Brockington, 2004; Homewood et al., 2012). However, in Enonkishu, livestock was placed at the core of this conservation intervention. Landowners decided to call the conservancy 'Enonkishu' which means 'a place of cattle' in Maa. The vision was also one of landscape unity and a sense of being part of something greater than their respective titles—especially as communally owned group ranches and the early wildlife trusts were slowly disappearing (Bedelian, 2014).

In order to understand social perceptions, socioeconomic survey data were collected from a larger stratified random sample of conservancies in the Northern Mara. Ethical approval was sought and obtained through individual conservancies via management and consent forms (both in English and Swahili) that were read out before the questionnaire surveys (Supporting Information I). The total sample frame of 414 landowners (defined as the head of the household registered as a lease payee) was based on landowners in each conservancy. From this, a random sample of 140 households was chosen, stratified by conservancy. In Enonkishu, 41% ($n = 11$) of landowners were sampled. Each survey began with an explanation of the purpose of the survey, how data would be used, confidentiality measures, the participant's rights and sought their consent before proceeding. The survey was conducted using the ODKcollect application in English, Swahili or Maa (all translated and independently back translated to ensure precision) depending on the preference of the respondent. The complete survey can be found in Supporting Information II. Responses from surveys were reviewed daily once surveys were uploaded. A random selection of 7% of respondents were called to validate and confirm the data collection process. To analyse the social perceptions data, we used design-based or survey-based inference. This is possible as the population is specified, and the data values are unknown, but regarded as fixed, unlike

in most model-based statistics (Lumley, 2010). The sample design is controlled (stratified random selection of individuals from a fixed population); therefore, estimates of the population totals and means can be calculated from the Horvitz-Thompson estimator of the population, with a finite population correction (Lumley, 2010). Furthermore, the estimator allows us to calculate standard error, and subsequently, 95% confidence intervals (95% CI), which we present with each result. All the analysis of the household survey was done in R (R Core Team, 2019), using the packages survey (Lumley, 2019) and *srvyr* (Ellis, 2019).

Our methods were largely quantitative due to being part of a wider questionnaire process. Though a formal qualitative approach of interviews would have added deeper insight to social perception, cost and time did not allow, we gained insight into participants' perspective informally through some of the authors (1 and 3) being part of Enonkishu's developmental process.

In 2022 culture, cattle and a sense of place was still critically important for members of Enonkishu. The socioeconomic survey revealed that 100% of Enonkishu members strongly agreed that their culture and traditions were important. Also, 89% (95% CI: 71%–100%) felt that keeping livestock was important. However, despite this unified vision, 56% (95% CI: 27%–84%) of Enonkishu members were still concerned about the future of livestock keeping.

At the same time, wildlife was a crucial element of the vision. By leasing their individual landholdings on to a conservancy management company, landowners would receive regular income while planning grazing for both livestock and wildlife. In the sensitive ecological areas, homestead construction, cultivation and fencing are excluded. At the outset, a critical barrier had to be overcome, funds to cover conservancy operations and lease costs. The Wood family wanted to invest in a wildlife tourism venture that would cover the cost of the leases and provide income for management of the conservancy. Such conservancy agreements offer better security of income to landowners, through rent rather than bed-night payment from a tourism operator (Homewood et al., 2012; Thompson et al., 2009) and better conservation outcomes (Western et al., 2006, 2009) and have largely been adopted across the Mara.

However, the pressure to sell land or convert it to non-wildlife compatible uses still loomed large. Despite initial buy-in from all 150 landowners present at the first meeting in 2009, 15% (994 hectares) of the area outside the conservancy (Figure 2) was leased or sold and cleared for cultivation between then and 2016—indicating the considerable opportunity cost presented by setting rangelands aside purely for wildlife and pastoralism. Nonetheless the shared vision among willing landowners enabled the development of Enonkishu without funding from 2009 to 2016, when a grant from the African Enterprise Challenge Fund helped to secure the leases (of 20 US$/acre/year) for 3800 acres owned by 32 landowners. The physical boundaries of Enonkishu were determined by the funding that was available to secure the leases of these individual titles which formed an area around the principal tourism development. Other landowners were not included in Enonkishu Conservancy as there was insufficient funding to cover the cost of their leases. This setback was addressed when, in 2022, the excluded landowners voted to form a neighbouring conservancy called Mbokishi Conservation Area with clear indications to collaborate with Enonkishu Conservancy.

The collective vision for Enonkishu as a place of coexistence unified landowners and investors conceptually. However, achieving internal coherence and collaboration between diverse people with diverse needs under this shared vision was a vital step in achieving landscape conservation goals.

2.2 | Coherence landscape

> The capacity to achieve internal coherence by embracing a landscape's diversity of stakeholders and facilitating multi-stakeholder collaboration across levels and scales.
>
> (Arts et al., 2017, 42, p. 454)

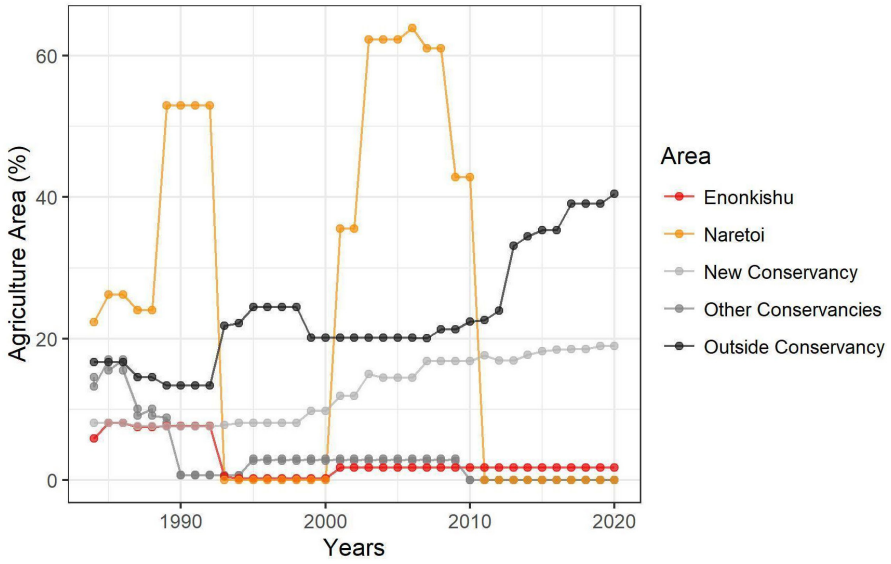

FIGURE 2 Percentage change in the area under cultivation from 1984 to 2020 based on satellite remote sensing at 30 m resolution.

Many Maasai people have faced decades of negative experiences of conservation shaped by exclusion, few benefits and unhonoured deals (Brockington, 2002; Homewood et al., 2012). Therefore, building trust, cooperation and coherence about conservation in the Mara, between diverse stakeholders, was a clear prerequisite (Adams & Hutton, 2007; West et al., 2006). Participation in decision-making is crucial to create more efficient, equitable and sustainable forms of resource management (Bedelian, 2014; Ribot et al., 2006). Yet it only becomes effective when there is a mechanism to represent local needs and aspirations in that decision-making (Bedelian, 2014; Ribot et al., 2006).

Devolving resource management is one way to empower local communities, but it pivots on the issue of who is represented and who makes the decisions (Bedelian, 2014), and whether those holding decision-making power are accountable (Ribot et al., 2006). In this context, good governance exists when meaningful powers are held by democratically elected and downwardly accountable decision-making bodies (Ribot et al., 2006).

A key learning from Enonkishu is that its model has adapted and evolved over time with the aim of ensuring the principles of participation, transparency and equitable benefit sharing between all actors. These engagements take considerable time and resources, yet they form the crucial base of any just form of conservation (Díaz et al., 2019; Martin, 2017). Broadly this was achieved with the collective structuring of people's rights to benefit, how these benefits were distributed and the decision-making rights over management and benefit distribution.

In Enonkishu's model, landowners "opt in" to the conservancy model via a signed and registered lease agreement, with fair negotiation on the benefits of the system. In light of the unjust process of 'green grabbing' (Fairhead et al., 2012), especially in nearby areas of northern Tanzania, this autonomy of inclusion was an essential part of achieving coherence among landowners. Everyone sought a fair distribution of benefits and decision-making rights for everyone else. The tourism developer for example sought long-term security of a tourism product from landowners, which depended on their long-term 15-year leases with terms preserving habitat for livestock and wildlife. Landowners wanted the rights to benefit fairly from this tourism model, to have the ability to influence decisions on their own land tunlike cases in other conservancies, for example, Bedelian, 2014; Cavanagh et al., 2020 and to ensure that the benefit flow is equitable and transparent.

The governance structure evolved over time to meet these conditions. In 2016 an initial company, the 'Enonkishu Stakeholder Company' or 'ESCO' was set up to administer finances and leases. It simply had a manager and ran money without governance from wider constituents and formal board representatives. However, it did not have a functioning board that represented the actors involved, especially the landowners. There was no financial oversight and limited transparency. Before 2020 there were leases in place but they were of smaller value and not formally registered. Revenue then was solely from leases.

In 2020 this was replaced by a new body, Kileleoni Limited. In this company, ownership and power is divided 50–50 between landowners and tourism partners This represents a more even split compared to some conservancies in the Greater Mara, where tourism partners hold the majority in any joint companies.

Kileleoni's board is responsible for establishing its vision, setting strategy and structure, holding the management accountable, and exercising accountability to their stakeholders, particularly in terms of conservancy activities and budgets. Separate sub-committees and working groups focus on particular issues identified as priority by the joint partnership of community and investors. This structure recognised the rights of all actors and provided them with transparency over the conservancy activities and budgets, and decision-making powers. These are vital components to achieve the long-term sustainability of a community conservancy model (Oburah et al., 2021; Ward et al., 2018). The importance of multilevel governance was acknowledged and established in this reorganisation (Brondizio et al., 2009). All landowners are members of the Enonkishu Cooperative, along with their families (hereafter referred to as 'conservancy members'). The cooperative meets quarterly and elects three representatives to the conservancy board on a rotating three-year term. This new governance structure aims to allow the continual engagement through multiple levels—to ensure that conservancy members are appropriately represented and included in decision making.

Livestock also lie at the heart of Enonkishu's vision of coexistence. Various conservation interventions in Kenya have focused on the management of livestock to improve rangeland health with various degrees of success. Critiques of these interventions have centred on the mismatch of top-down imposition of neo-liberal principles onto a complex, fluid, culturally specific way of managing livestock (Bersaglio & Cleaver, 2018; Pas, 2018).

Once Enonkishu was established, conservancy members assembled the majority of their individual cattle into one communally managed herd. They eliminated sheep and reduced the number of individually owned cattle grazing in the conservancy to improve rangeland conditions. Enonkishu members established a livestock committee to oversee this process.

In the recent survey, the majority of members were satisfied (67%–95% CI: 40%–94%), or very satisfied (22%–95% CI: 0%–46%) with the transparency of decision-making in Enonkishu conservancy, while 11% (95% CI: 0%–29%) were unsatisfied. And the majority were satisfied (67%–95% CI: 40%–94%) or very satisfied (22%–95% CI: 0%–46%) with the level of accountability in decision-making in the conservancy, while 11% (95% CI: 0%–46%) were unsatisfied. Nevertheless, survey results suggest that further devolvement of decision making is needed, as 67% of members (95% CI: 40%–94%) felt that they had little influence and 22% (95% CI: 0%–46%) felt they had no influence in decision making, whereas 11% (95% CI: 0%–29%) felt they had a lot of influence over decision making.

Women are perceived to have very little power to influence decisions in the conservancy. For instance, *no* interviewees agreed with the statement 'Women have the power to influence decisions in this conservancy'. This is despite the two-thirds gender

principle being set out in Kenya's 2010 constitution (that no gender takes up more than two-thirds of an elected or appointed body; GoK, 2010). This echoes patterns found in other parts of Maasailand (Brehony & Leader-Williams, 2023; Homewood et al., 2022; Westervelt, 2017), where women were largely uninformed about and left out of conservancy decision-making and benefit sharing, as well.

2.3 | Institutional landscape

> The capacity to make institutions work for landscapes, by recognising and capitalising on endogenous landscape institutions and building new institutions connected to broader policy frames and markets.
>
> (Arts et al., 2017, 42, p. 454)

Enonkishu's institutions, like its governance model, have evolved in tandem with their social and economic impacts on the ground. We refer to *institutions* as the *rules* that people use when interacting within a wide variety of repetitive and structured situations at multiple levels of analysis (Ostrom, 2008). Individuals who regularly interact use rules, norms and strategies (or their absence) designed and enforced by government authorities, traditional authorities, or themselves. These rules, norms and strategies may evolve over time leading to better or worse outcomes for themselves or the environment. Within this context, rangelands and wildlife are a common pool resource. Without effective institutions to limit who can use highly valued, common-pool resources, they can be used unsustainably, potentially resulting in their destruction (Ostrom, 2008). Here we look at the institutions that have evolved to manage Enonkishu since the establishment of the conservancy.

The new governance structures outlined above helped to build consensus but also created the legal entity, with binding powers, needed to fulfil certain governance principles that lie at the core of the conservancy and how it functions. The legally binding nature of Kileleoni Ltd creates the structure for negotiations around decision-making at the board level, provides a legal platform to enforce transparency and accountability, and provides provisions for representation of the multi-level governance. The leases form the core of the benefit-sharing arrangement between the land-owners and the conservancy and have clear covenants around the obligations for all parties including payments to landowners and use of land. The lease creation process is achieved through multiple steps. The leases are created and constantly reviewed by the board, to make sure they are aligned with conservancy members' needs. It is a legal requirement that a lawyer is present when leases are signed and that the terms are read to all members of a community/conservancy at annual general meetings. The registration of a lease is voluntary and requires a significant, real commitment to a land use for 15–20 years. Registration is carried out in front of the land control board in a structured meeting.

Nevertheless, rules around livestock are not legally binding but arrived at through negotiated consensus. However, each quarter the livestock committee creates a grazing plan, based on monitored pasture, rainfall conditions and people's needs. Conservancy members attend grazing committee meetings, which are often complex negotiations to fit their current needs. Individual livestock owners are charged a monthly fee of about US$2-US$3 per head per month to the conservancy management company for maintenance of their livestock within the communal herd. The fee includes disease prevention and treatments, herders, night guards and access to mobile bomas. These rules are not rigid nor strictly enforced. In practice, grazing plans are malleable and fluid. Extra grazing has been provided in times of drought and hardship for those who need it. Conservancy members who do not have formal access to land elsewhere, have been allowed to graze more cattle within Enonkishu. This fluidity and self-governance are perhaps why Enonkishu's approach to livestock appears to be well supported, with 89% (95% CI: 68%–100%) of households saying that conservancy rules on livestock were either helpful or very helpful.

2.4 | Market landscape

> The capacity to create marketable landscape values by nurturing entrepreneurship
>
> (Arts et al., 2017, 42, p. 454)

Revenue-generation is crucial to the long-term sustainability of working landscapes (Kremen & Merenlender, 2018). Diverse non-correlated revenue streams have supported Enonkishu Conservancy, to varying degrees, since its establishment and have evolved over time. The importance of non-correlated revenue streams was demonstrated by COVID-19, which created a perfect storm of reduced funding, reduced conservation capacity and increased threats to wildlife and biodiversity (Lindsey et al., 2020). Restrictions to travel meant that the operations of many protected areas were compromised, even incapacitated. Enonkishu Conservancy was able to withstand these pressures because of its diverse revenue streams. Although the main tourism facilities, catering for international clients, remained closed during COVID-19, income still came into the conservancy from the livestock operation, home-owner conservation fees, and philanthropy through the conservancy effort and those of the Maasai Mara Conservancies Association (MMWCA).

Revenue is critical for Enonkishu to cover the leases of land comprising the conservancy. Enonkishu tourism partners pay for the leases of land at approximately US$25/acre/year, based for the long term (15 years) and with provisions that in good years when tourism revenue is high, conservancy members receive more than the base rate land lease. In this section, we outline the evolution of the different income streams which support the costs of lease payments and management.

2.4.1 | Tourism

The largest revenue stream for Enonkishu is tourism, similarly to the rest of the Mara ecosystem. The Wood family began converting their intensively cultivated Olerai Farm in 2012 with a vision to restore its biodiversity and wildlife habitat and create an environment in which investors would buy sites to build private homes (Figure 1). The Wood family transformed three irrigation pivots on 1000 acres into a safari property called 'Naretoi' comprising 40 five-acre plots, where investors could buy land and build (within guidelines) a safari home. Naretoi is managed by a Homeowners Association and is represented on the Kileleoni Board. All Naretoi plots have since been sold, with a stable revenue stream to support the conservancy, as each plot is charged a conservation fee (whether or not their property is occupied), as well as a minimum of US$4500 yearly to Enonkishu.

The second tourism product was the 'House in the Wild' venture set up by the Wood family. They created a high-end, low volume lodge within Naretoi that can accommodate 16 guests. 'House in the Wild' contributes over US$200,000 per year to support the conservancy.

The final tourism product is the 'Wild Hub', another venture set up by the Wood family, which focuses on domestic tourism, educational tourism and safari guide training. This provides another US$100,000 per year to support the conservancy.

2.4.2 | Philanthropy and grants

Philanthropy and grants have supported Enonkishu since 2016 when a grant from the African Enterprise Challenge Fund (AECF) paid for the first-3 years of land-lease payments to the landowners. Although a model which depends on fundraising is unreliable, income from philanthropy does continue to provide important unrestricted funding. This funding is largely through the Naretoi Homeowners and guests of House in the Wild, who have brought in over US$500,000 since 2018.[2] This income also helps to support the conservancy management costs, lease costs and community development projects.

2.4.3 | Livestock

Not all attempts to increase revenue to the conservancy and its members have been successful. 'Mara Beef' was set up in 2014 (with the same AECF grant) as "a new direct to market sales approach for pastoralists in Kenya" (Tyrrell, 2018). This was an attempt to provide a win-win solution of improving pastoral livelihoods through improved access to markets, while also improving rangeland management. Mara Beef introduced breeding bulls to upgrade the local herds and sold the beef to supermarkets and restaurants through their own abattoir, where cattle were slaughtered on site. However, Mara Beef was closed in 2018. Its main challenge was that in order to keep the abattoir financially viable, 150 cows had to be butchered a week. This demand could not be met, even with livestock accessed from across the Mara, which resulted in the purchase of sub-standard cattle from many sites across Kenya. Furthermore, local infrastructure could not sustain the supply: roads, vehicles and theft along the value chain meant that the product did not arrive in time to Nairobi. All of these meant that Mara Beef could not fulfil the requirements of customers. Furthermore, Mara Beef value chain did not result in the intended positive impact on rangeland health. The assumption was that better managed cattle of higher quality on Enonkishu and across the Mara would be able to supply the abattoir, but there was at that time little incentive for better management to be linked to the market as Enonkishu could not supply enough cattle from its young herd. However, the determination to establish Mara Beef and its slaughterhouse, despite the failure of the enterprise, arguably sent a key message to the Enonkishu members of commitment to the roles of livestock in development and enterprises, and not just an opportunity for a tourism venture.

Nevertheless, the other livestock project in the form of a conservancy cattle herd in Enonkishu, established from 2018, has continued to grow successfully. A donation of higher-quality Boran bulls helped to improve the conservancy-owned cattle breeding herd. Heifers were purchased from local markets and crossed with these bulls to produce faster-growing offspring with a larger frame ideal for the beef market. It took until 2022 for the conservancy cattle herd to become commercially viable and offset the start-up costs. The herd now has 372 head and generates a profit of around US$25,000 to support the conservancy, split between landowners based on their landholdings. The decision to sell cattle is made by the livestock committee based on the status of the herd and on market condition. Cattle are sold to a 'middle-man' buyer to then be sold to markets in Nairobi, for example cows that have stopped producing calves well, get sold. For example, in 2023, no livestock were sold because East Coast Fever wiped out all the calves and all cows were aborted.

2.5 | Management and knowledge landscape

> The capacity to manage resources by understanding endogenous management systems and identify options for more scientifically based resource management systems, participatory spatial planning, and decision making
>
> (Arts et al., 2017, 42, p. 454)

The ability to effectively manage the natural resources, as well as the underlying legal entities of conservancies, can be a considerable challenge. Top-down management of conservancies that ignores ecological functions, indigenous knowledge and social capital can result in the failure of conservancies to achieve their

[2]In 2018, 450 acres of the original Olerai farm property, also adjacent to the river, was sold to 'Fairoils farm'. Fairoils Farm produces Essential Oils for DoTERRA. Through a partnership arrangement with Naretoi, profits from Fairoils support conservation and community development projects through the donations to Enonkishu.

objectives or in the worst case can exacerbate social conflicts (Greiner, 2012). In addition, landscapes are dynamic and knowledge of landscape processes and attributes must inform decision-making in landscape management (Sayer et al., 2013). In this way, knowledge and management of the landscape are adaptive and reciprocal.

Enonkishu Conservancy has increased its knowledge base and staffing to build a diverse team capable of effectively running the conservancy. Personnel include a general manager, community liaison officer, and monitoring and evaluation officer, among other positions and roles. There is also a team of seven rangers trained in human-wildlife conflict prevention and anti-poaching, working in the conservancy. In addition, the conservancy employs part-time consultants to support the management team in board administration, finance, legal advice, governance advice, and conservation and business planning.

Livestock grazing in the conservancy is planned with indigenous knowledge, rules and norms, together with the principles of Holistic Management (Savory, 1988) to improve grasslands and manage complexity. In practice, this results in mobile bomas,[3] which target bare and degraded land with concentrated hoof action and manure deposits to stimulate germination and water absorption. In addition, targeted grazing is used to increase the recovery of favourable grasses. These practices are all implemented with eight full-time herders and a grazing coordinator. Nevertheless, gaps in capacity still exist in livestock sales and marketing.

3 | CONSERVATION OUTCOMES OF ENONKISHU

3.1 | Land use

To understand how the land under cultivation has changed over time on Enonkishu, we carried out a remote sensing analysis. We downloaded Google earth timelapse) imagery for each year from 1984, at a 30 m resolution and obtained from the Landsat series of satellites. All cultivation areas were digitised in QGIS. In R (R Core Team, 2022) using sf (Pebesma, 2018; Pebesma & Bivand, 2023), the total cultivation area and proportion of cultivation area in each conservancy was calculated over time.

A significant achievement of Enonkishu is that it has actively prevented land transformation into cultivation by providing alternative, desirable direct and in-direct economic benefits to landowners. There has been no cultivation on Enonkishu since 2011. At its maximum, 8% of Enonkishu (1.6 km^2) in the early 1990s and 64% of Naretoi (2.9 km^2) in the mid-2000s was cultivated. By 2020, just 1.7% of Enonkishu (0.3 km^2) and 0% of Naretoi was cultivated (Figure 2). In comparison, cultivation has steadily increased in the neighbouring area left out of Enonkishu prior to the establishment of Mbokishi Conservancy where areas under cultivation increased from 8% (2.6 km^2) in 1984 to 19% (6.2 km^2) by 2020. In comparison, land under cultivation further north and north-east has increased from 17% (10.9 km^2) in 1984 to 40% (26.5 km^2) in 2020.

[3]A movable metal livestock fence.

3.2 | Rangeland condition

Fourteen 25 metre transects across Enonkishu were sampled four times per year since 2018 using five equally spaced (5-m) quadrats. Four transects are within control areas that are not included in Enonkishu's grazing plan and 10 transects are located within areas included in the grazing plan. Eighteen parameters are examined in each quadrat to describe cover, soil surface description (capping), litter (the amount of dead plant debris covering the soil surface) and plant species (grass, tree, shrub, forbs or sedge). The corresponding ratings are re-calibrated such that a rating of "5" indicates the best possible score, with "0" indicating the worst possible score. As an example, the parameter of Plant Density rates 5 if there is 100% plant cover, with a score of 0 indicating no plant cover (see Supporting Information III for details).

The aforementioned combination of planned livestock grazing with indigenous knowledge, rules and norms, together with the principles of Holistic Management, has resulted in changes to the rangeland condition. Figure 3 shows a number of results from vegetation biomonitoring from 2017 to 2022. On average, grazing plan blocks in Enonkishu conservancy are 24% higher in quality than control samples outside of the conservancy and not in the grazing plan (Figure 3). Decomposing litter, erosion and soil movement, plant base cover, litter existence, plant density, soil capping, total litter and basal cover, and overgrazing indicators are all scored higher on average in Enonkishu conservancy.

3.3 | Livestock

Livestock in the conservancy were recorded at the end of each month and births, deaths and treatments among the conservancy herd were recorded in real time. Each quarter, the conservancy herd is valued by those familiar with current market cattle sale prices.

Since 2017, the Enonkishu conservancy herd has provided US$25,000 of additional income to conservancy members. Over time, it is expected that this figure will increase to match the financial contribution from lease payment for their land. Two hundred forty calves have been weaned over the last 5 years and the herd grew from 216 to 372 animals valued at over US$100,000. Only 14 livestock deaths were attributed to wildlife conflict over the past 5 years. This low number is attributed to mitigation measures that have been put in place to prevent carnivore attacks, including using rechargeable torches for night guards, predator deterrent lights, mobile solar electric fences and additional night guards.

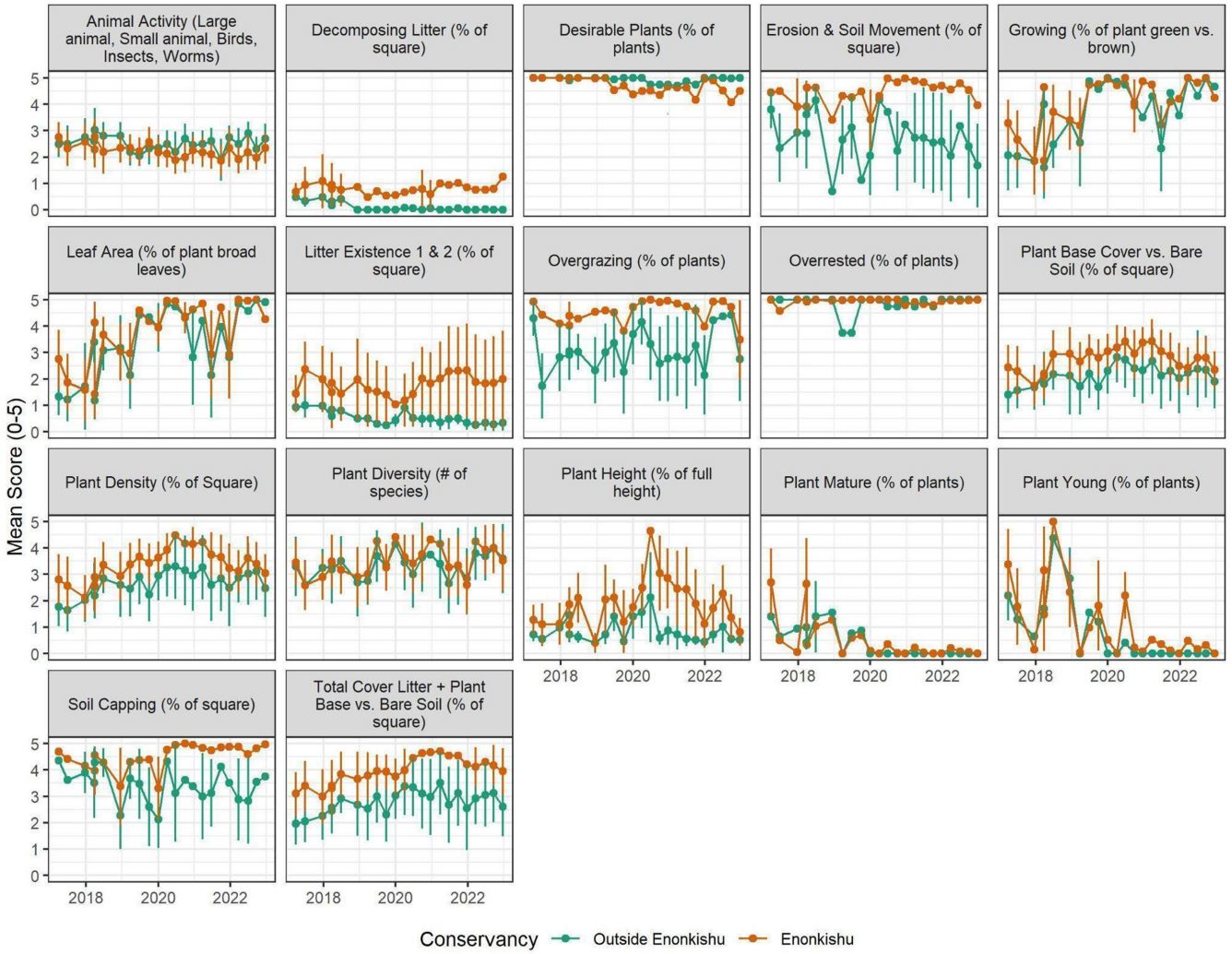

FIGURE 3 Results from the vegetation biomonitoring on transects in Enonkishu conservancy and transects outside Enonkishu conservancy ('control') since 2016. The corresponding ratings for each variable have been re-calibrated such that a rating of '5' indicates the best possible score, with '0' indicating the worst possible score (see Supporting Information III for details).

3.4 | Wildlife

Data to estimate numbers of large mammals in Enonkishu conservancy were collected twice per month since June 2016 via two 2 km strip transects by conservancy management staff. All mammals located within 100 m (as verified by rangefinder) from the transect are recorded. Population estimates are then calculated for the conservancy using Jolly II methodologies (Jolly, 1969). In Naretoi,[4] wildlife data were collected twice per month since 2019. The small size of Naretoi and the constant communication between the teams counting ensures that these counts are precise. The diversity indices were calculated using the Vegan Package in R (Oksanen et al., 2017).

Wildlife numbers fluctuate greatly within Enonkishu, due to the interplay between rainfall, predator and livestock presence, and changes to large-scale mobility across the Mara-Serengeti ecosystem. However, no wildlife existed in Naretoi for a number of years prior to 2010 and very few existed in Enonkishu before 2016 (Tarquin Wood, personal communication, February 27, 2023). While we do not have wildlife data from before 2016 in Enonkishu and before 2019 in Naretoi, there is now a relatively high abundance of wildlife (Figure 4a,b), and richness, diversity and evenness have also increased or stayed similar over-time (Figure 4c,d). These densities and richness of wildlife are similar, if not higher than many of the region's state-led protected areas (Campbell & Borner, 1995; Ogutu et al., 2011; Schuette et al., 2016). Survey results suggest that landowners are supportive of the presence of wildlife as 100% (95% CI: 100%) of respondents liked or strongly liked wildlife living in the area.

3.5 | Livelihoods and well-being

All landowners surveyed said that their lives had improved since the land leases were paid by Enonkishu (Figure 5). These land

[4]Three irrigation pivots on 1000 acres of Olerai Farm were transformed into a safari property called 'Naretoi'. See 6.d below.

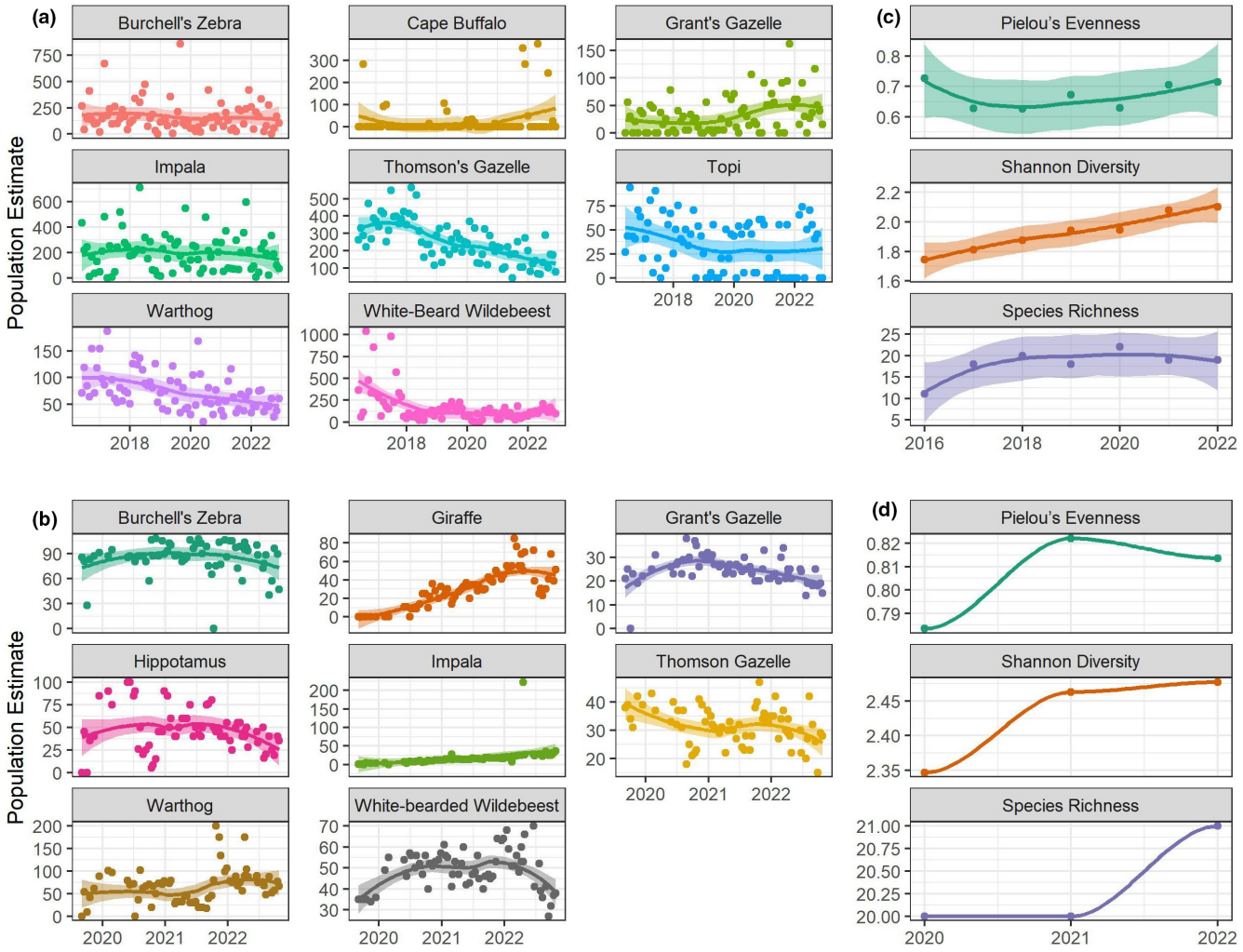

FIGURE 4 A scatter plot of estimated wildlife populations at monthly intervals from transect sampling of the eight most common large mammals in (a) Enonkishu (2000 acres sampled) (b) Naretoi (1000 acres sampled). Locally estimated scatterplot smoothing was added to demonstrate trends over time. (c, d) Annually aggregate indicators of community composition with Pielou's Evenness (how evenly the individuals in a community are distributed among the different species with 1 being even); Shannon Diversity increasing values indicate increasing diversity; species richness for (c) Enonkishu and (d) Naretoi.

leases now amount to over US$90,000 per year, with an average payment of >US$2000 per leaseholder per year. Furthermore, Enonkishu landowners have diversified their livelihood activities since lease payments were established. Before Enonkishu 56% (95% CI: 27%–84%) of landowners surveyed carried out livestock keeping as their principal household activity. This has now decreased to 44% (95% CI: 16%–73%) since Enonkishu was established, with conservancy income, employment and own business becoming the main household activity for 33% (95% CI: 6–60), 11% (95% CI: 0–29) and 11% (95% CI: 0%–29%) of survey households, respectively.

Furthermore, Enonkishu has supported the neighbouring Emarti community in different ways. These have included: building a borehole for drinking water; supporting a health clinic that serves a ward of 16,000 people; building the Emarti secondary school in 2012; improving the infrastructure of Emarti primary school; the donation of Environment libraries to five different schools in the area, each of which come with solar powered wi-fi.

Over 400 people are employed within Naretoi, House in the Wild and the Enonkishu Conservancy. Womens' enterprise initiatives are supported and there is an indigenous tree nursery at The Wild Hub where up to 6000 seedlings can be produced a month, from seed collected by the Community Based organisation, Women in the Wild.

4 | DISCUSSION

Ideally, working landscapes can help to achieve win-win solutions which are 'good for people, good for wildlife, good for the economy, participatory, empowering and liberating' (Homewood et al., 2012; Igoe, 2010). Yet there are few examples of these, and even fewer have been socially and ecologically evaluated. Here we

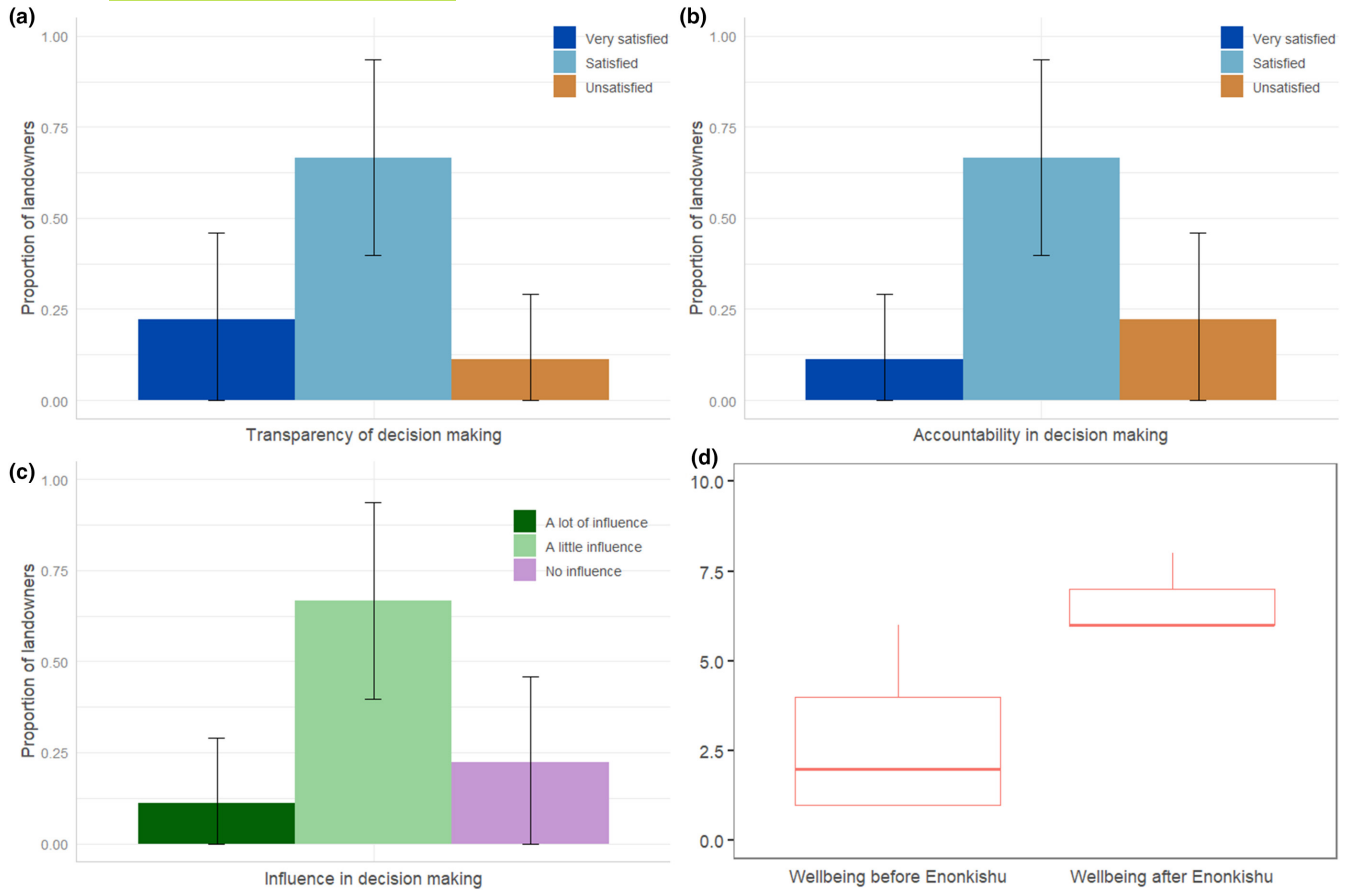

FIGURE 5 Landowner survey responses when asked (a) "Are you satisfied with the transparency of decision making?" (b) "Are you satisfied with the level of accountability in decision making?" and (c) "How much influence do you feel this household has in decision making in conservancy?". Error bars denote 95% confidence intervals. (d) Self-assessed wellbeing scores (0–10) when asked "Can you tell me how your life was before land access payments were paid by the conservancy?" and "Can you tell me how your life is at the moment?" Answers were based on the use of matchsticks where 1 means everything was very bad and 10 means everything was very good.

have used a working landscape approach to scrutinise the establishment and development of one conservancy in the Maasai Mara and commented on some of the achievements and challenges it has faced.

Our findings highlight first, how Enonkishu has had considerable positive conservation outcomes, preventing the continued encroachment of farmland, maintaining and improving rangeland health relative to the surrounding area, while maintaining diverse and large populations of wildlife and livestock. In addition, the conservancy has resulted in substantial direct and indirect benefits to its community members, who are satisfied and happy with the conservancy movement. This kind of evidence which includes social and ecological achievements is rare in community-based conservation interventions and when presented, is either ecological or social and rarely measured concurrently (Brehony et al., 2018; Brehony & Leader-Williams, 2023; Brooks et al., 2013).

Second, our findings show how the process of achieving ecological and social goals has occurred through the creation of consensus, creating institutions, revenue and the knowledge to make adaptive decisions, through successes and failures. However, this process will need to continually evolve and improve. For instance, though there were changes to the conservancy's legal institutions, benefit sharing and decision-making rights under a new company, in 2020, the model still requires further evolution to achieve greater consensus by improving transparency and decision-making rights. This could be achieved by increasing the transparency of the use of funds and by ensuring that information flows more effectively from the board to landowners and vice versa.

Third, our findings reiterate the importance of livestock to Maasai households in Enonkishu. Livestock is important for subsistence but also for defining the vision of the conservancy and the institutions and governance that underpin it. Though rules exist in terms of how livestock is used within the conservancy, their fluidity and inclusivity is crucial in achieving coherence and collaboration in Enonkishu. The incorporation of livestock in community-based conservation is rarely successful with livestock often deemed a threat rather than as an intrinsic part of the landscape (Ogutu et al., 2016). This research adds to a body of literature which suggests that this does not have to be the case (Connolly et al., 2021; Keesing et al., 2018; Russell et al., 2018; Western et al., 2020).

Fourth, diverse revenue streams enabled Enonkishu to withstand the pressures of Covid-19. Many PAs rely on a single, volatile

and often inadequate funding source—tourism. This research shows how this area has developed a more sustainable, diversified, revenue stream to support conservation and local landowners.

Furthermore, the hopeful story of Enonkishu offers lessons for balancing the trade-offs between conservation and 'development' beyond the Maasai Mara in three main ways:

First, in order for conservation to be sustainable it has to be the preferred choice of land use. The opportunity costs of conservation have to be met through sufficient monetary and non-monetary benefits to ensure that communities are secure in terms of finance and wellbeing and are tolerant of conservation. The convivial conservation approach of Büscher and Fletcher (Büscher & Fletcher, 2019) moves away from mainstream neoliberal approaches to conservation and suggests the concept of a 'conservation basic income' next to conservation areas. Although the benefits that flow to community members are not provided by the state or globally, they are in a sense 'convivial' as they flow to all members and arise from the self-determined creation of funds that flow to all members.

Second, the journey to the creation of a governance structure that meets the needs of community members is not linear. It requires adaptiveness and flexibility. It also requires a willingness to accommodate particular opportunities and the leadership of individuals in order to move towards a model that is owned by and right for communities that is transparent, accountable and equitable.

Third, 'win-win' approaches to conservation, must define what is meant by 'development' in terms of the context in which it operates. Conservation must integrate the cultural and economic appetite of communities, and be able to adapt to a changing national environment and to people's changing desires and needs. In Enonkishu's model, pastoralism was not idealised as an unchanging tradition of the past, but as culturally important, active economic activity that is evolving with new opportunities. It is also important not to draw these trends to a general 'Maasai' context as Enonkishu is composed of heterogeneous members with their own particular opportunities and connections.

We are aware that although the evidence present is robust, alternative research approaches, such as a political ecology, would help to further elucidate patterns of social and political differentiation within a community, and more effectively demonstrate the qualitative ways in which different actors benefit or not (e.g. Cavanagh et al., 2020). It is also clear that though separate community conservation areas might achieve their goals, this progress needs to be supported by policies and practices that will help to sustain and connect larger working landscapes to maintain healthy rangelands and mobility and prevent losses to livestock production and to wildlife (Brehony et al., 2022; Kremen & Merenlender, 2018; Western et al., 2020).

AUTHOR CONTRIBUTIONS

Peter Tyrrell, Brian Perry, Peadar Brehony, Philippa Wood and Dickson ole Kaelo conceived the ideas; Peter Tyrrell, Peadar Brehony, Freddie Hunter and Rebekah Karimi designed the methodology; Rebekah Karimi, Rose Muiyuro, Esther Kang'ethe and Freddie Hunter collected the data; Peadar Brehony, Freddie Hunter, Rebekah Karimi and Peter Tyrrell analysed the data; Lauren Evans, Peter Tyrrell, Peadar Brehony and Brian Perry led the writing of the manuscript. All authors contributed critically to the drafts and gave final approval for publication.

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CONFLICT OF INTEREST STATEMENT

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Peter Tyrrell reports financial support was provided by Maasai Landscape Conservation Fund. Philippa Wood reports a relationship with House in The Wild that includes: employment and equity or stocks.

PEER REVIEW

The peer review history for this article is available at https://www.webofscience.com/api/gateway/wos/peer-review/10.1002/2688-8319.12369.

DATA AVAILABILITY STATEMENT

Data available from the Dryad Digital Repository: https://doi.org/10.5061/dryad.547d7wmh6 (Tyrrell et al., 2024).

STATEMENT ON INCLUSION

Our research unites authors from various nations, including scientists situated in the country where the study was conducted. All contributors actively participated in the initial phases of the research and study planning to guarantee the comprehensive incorporation of the diverse range of viewpoints they bring. When applicable, references to literature authored by scientists from the region were included, and deliberate steps were taken to incorporate pertinent contributions published in the local language.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

Supporting Information I. Survey consent form.

Supporting Information II. Household survey questionnaire.

Supporting Information III. Vegetation scoring.

Supporting Information IV. Spread of cultivated land over time.

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