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Community-Based Wildlife Conservation on Pastoral Lands in Kenya: A New Logic of Production with Implications for the Future of Pastoralism

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Abstract
Community-based wildlife conservation has been identified as a potentially successful approach to meet the needs of wildlife and the interests of local communities living among wildlife, national governments, and the global community interested in stemming the extinction crisis facing the planet. There is a significant literature critiquing the neoliberal approach to community-based conservation arguing that it has not been successful in meeting conservation goals or community goals. While in agreement with many of the critiques and the general calls for a more equitable direction that respects and draws on local and indigenous value systems, we focus on some of the implications of community-based conservation for pastoralism in Samburu County, Kenya. We employed an ethnographic approach, integrating informal and in-depth interviews, a random sample survey of 300 households, participant observation, and experimental economics games. Our findings show that the establishment of core areas, buffer zones, and grazing strategies that depart radically from previous practices reduced pastoralists' access to critical rangeland resources and forced them to find pastures elsewhere. Thus, while community-based conservation purports to encourage landscape-level land management and coordination, in practice, it contributes to land fragmentation. Our results also explain why community-based conservation persists despite the costs for pastoralists.

Keywords Community-based Conservation · Pastoralism · Holistic Grazing Management · Wildlife Conservation · Conservation Logic · Samburu County · Kenya

Introduction

Community-based wildlife conservation has been identified as a potentially successful approach to meet the needs of wildlife and the interests of local communities living among wildlife, national governments, and the global community in stemming the extinction crisis facing the planet by bringing together the values of "community" with effective conservation practices (Adams & Hulme, 2001; Northern Rangelands Trust http://www.nrt-kenya.org). By the 1990s, conservationists were beginning to understand the failure of strongly protectionist approaches due to local communities' resistance to exclusion from key resources and because wildlife could not be contained within parks and reserves (Western et al., 2015). Community-based conservation that engaged local communities by giving them a larger stake in conservation success was proposed to encourage greated willing participation (Hulme and Murphree 2001). Community-based conservancies (CBCs) are one of the more recent approaches undertaken. CBCs are entities formed on community-owned or controlled land on which CBC members decide to devote some land for conservation activities. In exchange for setting aside land, following rules, and engaging in practices that promote conservation (such as prohibiting killing wildlife, restricting livestock grazing and refraining from using other resources like trees in conservation areas) communities expect to gain benefits

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such as revenues from tourism, employment in CBCs, and improved natural resources (Galvin et al., 2018; Lesorogol, 2022). More intangible benefits such as intrinsic value placed on wildlife, community pride in protecting wildlife and land and other social and health benefits derived from CBC revenues are also attributed to CBCs.

While economic and social benefits are emphasized at community level, the global promotion of CBCs fits squarely into neoliberal notions of placing appropriate market value on biodiversity such as wildlife. This follows the logic that once assigned its true value, in terms of its role in global conservation and stemming extinction, investments in CBCs will be forthcoming, ultimately benefiting the global community through improved conservation (Buscher and Fletcher 2019, Scheba, 2018) The market value of CBCs has often been realized through tourism enterprises in which the CBC earns a share, for example by renting land to tour companies and by charging bed-night fees to hotels and campsites (Salafsky et al., 2001; Lamers et al., 2014). Income-generating projects for CBC members, such as handicraft production, often facilitated by conservation NGOs, is another strategy to bring market value and returns from conservation. Efforts to engage CBCs in Payments for Ecosystem Services (PES) programs and with global carbon markets by calculating carbon sequestration on CBC land and selling credits on carbon markets are the most recent examples of the integration of CBCs with global green capitalism (Fairhead et al., 2012; Fletcher et al., 2019).

While CBCs are arguably deeply embedded in this capitalist logic, what some critics call "green grabbing" (Fairhead et al., 2012), this is not the only logic applied to CBCs. For example, a very different one emanates from what is called holistic range management or holistic management (or HM for short) (Savory, 2013). HM is associated with ideas of adaptive management and regenerative agriculture and is opposed to industrial or intensive agriculture, though not to markets per se. Holistic management calls for resource managers (CBC members in this case) to develop short and long term objectives for their land and productive systems (in this case livestock and wildlife) and to design plans and practices that achieve those objectives with constant monitoring and adjustment (Gosnell et al., 2020). In the livestock production area, HM promotes specific practices for better productivity of the range. There is much debate over the effectiveness of the practices in different contexts (Gosnell et al., 2020, Briske, et al. 2011). What is notable is that rather contrasting approaches, such as PES or carbon credits and HM, may be simultaneously promoted on CBCs, though they may overlap to the extent that HM could lead to improved rangeland, more livestock production, and therefore better market returns for CBCs.

There is a significant literature critiquing the neoliberal approach to community-based conservation (Brockington et al., 2008; Igoe & Brockington, 2007; German et al., 2017, Buscher & Fletcher 2019). It is argued that it has not been successful in meeting conservation goals (wildlife habitat and numbers continue to decline) or community goals (benefits are often limited and decentralized management is often ineffective). Further, creating a market in conservation serves to advance the commoditization of local biodiversity resources which at worst may lead to outright dispossession of local residents or at least to a diminution of their rights over critical resources. Often, powerful actors at global and national levels overwhelm local actors with predictable outcomes. There are calls for coalitions to form to challenge the wholesale transformation of biodiversity into marketable commodities and to promote fairness, equity and justice in conservation processes (Buscher and Fletcher 2019).

While in agreement with many of these critiques and the general calls for change in a more equitable direction that respects and draws on local and indigenous value systems, in this paper we focus on some of the implications of CBCs for pastoralism itself, in the context of northern Kenyan wildlife CBCs. Our recent research in three CBCs in Samburu County, Kenya, helps understand how market-led and HM-informed approaches to CBCs manifest in changes in land use governance, pastoral practices and the values attributed to pastoralism and wildlife (Lesorogol, 2022). Community-based conservation alters pastoral land use and pastoralists' access to resources needed for livestock herding success. As practiced in Samburu County, this approach creates zones of land use including the "core area" where herding is prohibited, the "buffer zone" where it is strictly limited and seasonally regulated and public use areas without restrictions from the CBC (though some CBCs also delineate areas for human settlements, thus limiting where people can live). The rhetoric espoused by promoters of CBCs includes values of wildlife and biodiversity conservation as well as pastoral livestock production and is presented as a strategy that can achieve all of these objectives (King et al., 2015). In practice, however, the emphasis is tilted toward conservation values that prioritize setting aside land for wildlife, promoting tourism and other economic benefits and regulating livestock uses of land. Resources channeled to conservancies primarily support these objectives and conservancy members generally understand conservancies in these ways (Lesorogol, 2022). Thus, CBCs represent a new logic of resource access and use that has important implications for pastoral communities that rely on these resources for their livelihoods. In "conservation logic", holistic Samburu values traditionally associated with the natural environment narrow to a focus on market values from tourism. In CBCs, livestock production may even become subsidiary to wildlife

protection, for example by excluding livestock from conservation "core areas". CBCs also advocate changes to pastoral production, derived from HM, such as fewer (healthier) livestock to decrease competition with wildlife and exclusion of non-members (now called "encroachers") from CBC land. This logic affects people differentially. Wealthier pastoralists need access to extensive pasture, so reduced access is costly to them, although they may have enough resources to move their livestock outside CBC areas thus escaping the rules and prohibitions in place in CBCs. They may also draw on their social capital to pursue new sources of power through the CBCs (e.g., on boards or through employment). For poorer pastoralists, losing access to pasture is less problematic since they have few livestock to graze, and the possibilities of gaining economic opportunities from the CBCs may be appealing. However, the magnitude of these benefits is limited, and the potential for poorer pastoralists to gain power through CBCs is constrained due to their lower social standing.

CBCs represent a new institution of land use with emergent values and norms that diverge from those that characterize Samburu pastoralism. By increasing the relative value of pastoral land for conservation, CBCs set in motion new dynamics relevant to livestock production and socio-political-economic relations. The differential impacts of CBCs are evident in the contested nature of CBCs where we observe diverse opinions as to the reach and authority of CBC governance and the relative values assigned to wildlife, land conservation and pastoral livelihoods. The growth of CBCs in recent years, even in places with low tourism potential, suggests that "conservation logic" is expanding with important yet uncertain consequences for pastoral communities.

Research Methods

The material presented here is drawn from a study of three CBCs in Samburu County conducted in 2018-19, which built on the authors' many years of research among Samburu pastoralists with a particular focus on land use change and its implications (see Lesorogol, 2008, 2010; Lesorogol & Boone, 2016 for examples of earlier work). The study had three primary aims. First, we sought to understand the governance of CBCs in terms of the institutional structures present in the communities relevant to land use prior to the establishment of CBCs and those introduced by the CBC and how these structures intersect and interact. Second, we wanted to know how CBC members understand the structure and functioning of the CBCs and their meaning. The third aim was to elucidate the benefits and costs of the CBCs, particularly as perceived by members and especially those relevant to their livelihoods.

We selected three CBCs for the study, two of which were older and more established CBCs, where we expected a relatively high level of familiarity with the CBC among members and more experience with the costs and benefits. The third CBC selected is one that is newer and far less operational. Here, we expected less familiarity with the CBC approach and fewer benefits (and perhaps costs) among members.

The study employed a primarily ethnographic approach, including methods such as informal and in-depth interviews, a random sample household survey (100 households per CBC, selected randomly from member lists), participant observation, and experimental economics games. Methods were utilized depending on the type of information required to address research questions. For example, to understand the institutional structures of land use institutions in the communities and how the establishment of the CBC affected them, we interviewed people familiar with the history of the CBC and those involved in its governance, as well as some community members who were much less familiar with the history and functioning of the CBC, in order to obtain contrasting views. To generate data on benefits and costs of CBC membership, we used a random sample survey of 100 households in each CBC and asked a series of questions related to household well-being and benefits and costs of the CBC at the level of the individual, household, and public. The survey gives us greater confidence that the results represent the community as a whole including significant variability. In this contribution, we draw primarily from interviews, the survey, and our observations during the study. The next section presents background information on Samburu pastoralism, followed by a discussion of "conservation logic" and how it differentially affects pastoralists.

Samburu Pastoralism and the Logic of Dairy Production

Like many African pastoralist societies, Samburu pastoralism has historically been oriented toward dairy production for household consumption (Bailey et al., 1999; Mwanyumba et al., 2015). Even today, though almost all Samburu participate in livestock markets to some degree, almost all prioritize milk production for the household, illustrating the strength of commitment to continuing traditional practices adapted to local ecologies, economies, and social organization. Samburu people, numbering about 300,000 according to recent census data (Republic of Kenya, 2019), primarily live in northern Kenya, mostly in present-day Samburu County, a semi-arid landscape of 20,000 square kilometers, about three-quarters of which is composed of

extensive lowlands with rainfall between 200 and 500 mm annual average and one-quarter highlands with higher rainfall averages between about 500–750 mm (Fig. 1). Typical of semi-arid landscapes, rainfall is highly variable both temporally and spatially and Samburu have adapted with mobility to move livestock to pasture, water, and minerals where and when they are available across the seasons. In most of the county, there are two rainfall seasons, one in March-April (long rains) and one in October-November (short rains). The highlands often receive additional short rains in July-August. Droughts are a regular though unpredictable occurrence and vary in extent and severity. Over the last few decades, droughts have occurred every few years, and there is some evidence and, perhaps more so, perception that droughts are increasing in frequency and that climate change may exacerbate drought in the region (Haile et al.,

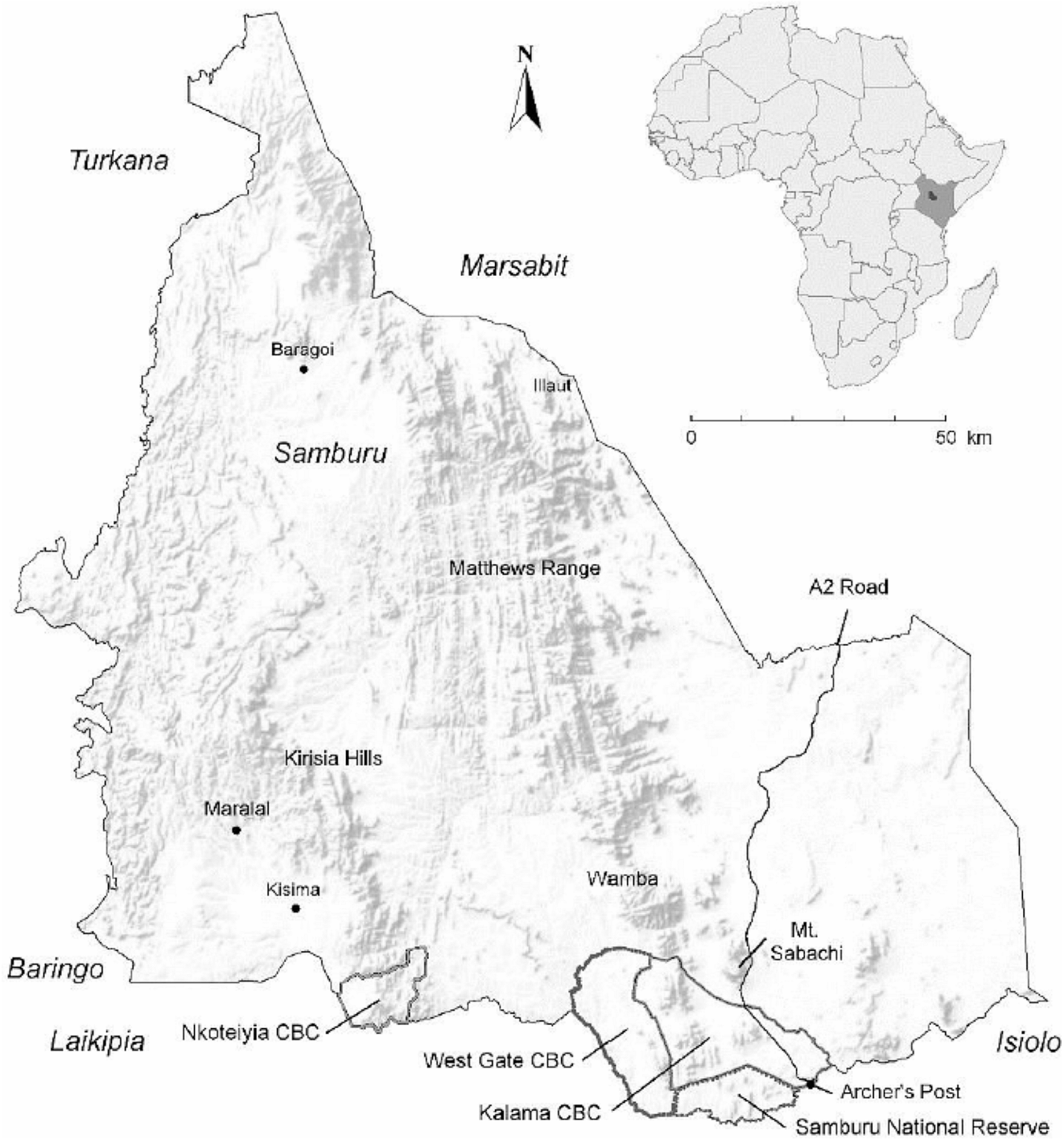

Fig. 1 Map of Samburu county with study communities marked

2020). In addition to mobility, Samburu also employ other strategies to take advantage of the diverse vegetation in the region, for example, by keeping herds of cows, sheep, goats, and, in some areas, camels. Each species can access different kinds of forage (e.g., cows and sheep primarily graze on grasses while goats and camels primarily browse on trees and shrubs) and have varied susceptibilities to disease, needs for water and ability to migrate. Local breeds are adapted for hardiness and mobility, although some herders have cross-bred with non-indigenous breeds for improved milk or meat production.

Livestock production remains the primary livelihood activity for most Samburu people today. Production orientation toward dairy for household consumption is borne out by data on herd structures (Table 1). For the full sample (of 299 surveyed households), the mean percent of cattle that are female is 78%, with males representing 22% of the herd on average. This high percentage of female animals indicates that milk production is the primary objective, while a small number of male stock are retained for breeding with others being sold on the market or exchanged for other purposes. The high percentages of female stock are similar for sheep, goats, and camels. Slightly higher percentages of male sheep and goats is consistent with the ease with which these livestock can be sold. Small stock reproduces more quickly than large stock and can be sold more readily on local markets or to butcheries. Thus, retaining more male small stock may be advantageous for households because they can sell them for daily cash needs. Even so, females make up at least two-thirds of small stock and camel herds.

In order to assess whether wealth has an effect on herd composition, the data were divided into wealth quintiles according to total household livestock holdings. The results in Table 1 show consistently high female percentages across wealth quintiles. For cattle, poorer households have even higher female percentages in herds, with the poorest quintile having over 90% female cattle. Poorer households may be forced to sell most livestock for cash needs, but they will strive to retain at least a milk cow for household needs and also as a marker of Samburu pastoral identity. For the wealthier quintiles, the pattern of two-thirds or more female stock is quite consistent.

Although herd structures confirm the overall commitment to dairy production, Samburu herders do participate in markets for livestock, labor, and trade. More than in the past, people need money to buy food and clothing, and to pay for education, health, and transport expenses, among other costs. They earn money by selling livestock and by engaging in wage labor and trade of various sorts. Calculating income earned from these sources as well as from CBC employment and payments received by households from CBCs, our data reveal that livestock sales provide more than half of household income in a majority of households (Lesorogol, 2022). Figure 2 illustrates the mean proportion of income by source and quintile for the full sample. The wealthiest households earn the most from livestock sales, not surprising considering their greater livestock holdings. Even poorer households, however, depend on livestock sales for income, though trade and wage labor contribute more to their incomes compared to wealthier quintiles. These data do not include home consumption of livestock products. In an earlier study, we monetized the value of home-consumed livestock products (milk primarily, but also meat) and found that it contributed 35–45% of income for wealthier households but only about 10–15% for the poorest quintile (Lesorogol, 2008: 173).

Some Samburu living in the highland areas with more rainfall engage in crop cultivation, primarily maize and beans, but farm sizes are generally small (averaging about an acre), and cultivation is a risky endeavor given uncertain rainfall (Lesorogol, 2008). Historically, Samburu have denigrated cultivation as an activity not suited to pastoralists, an attitude that has not engendered a high degree of skill or commitment to farming, though there are exceptions. Similarly, hunting and gathering are, according to Samburu ideals, not activities that should be pursued for livelihood purposes, though they could be engaged in during emergencies. Foragers who live in proximity to Samburu and are often highly integrated with them are generally considered to be of a lower social status due to their lack of livestock. Thus, many Samburu do practice (and certainly idealize) what is sometimes referred to as "pure" pastoralism in which livestock-centered livelihood is valued above all (Spear and Waller 1993). This is one reason that wildlife have survived here whereas they have been eradicated from

Table 1 Samburu herd structures

	Full Sample Mean Percent Female	Wealthiest Quintile Mean Percent Female	Second Quintile Mean Percent Female	Third Quintile Mean Percent Female	Fourth Quintile Mean Percent Female	Poorest Quintile Mean Percent Female
Cattle	78 ($n=221$)	72 ($n=58$)	77 ($n=54$)	76 ($n=47$)	81 ($n=43$)	92 ($n=19$)
Sheep/Goats	68 ($n=283$)	65 ($n=60$)	67 ($n=59$)	69 ($n=59$)	70 ($n=59$)	69 ($n=46$)
Camels	67 ($n=57$)	68 ($n=26$)	68 ($n=18$)	65 ($n=9$)	63 ($n=4$)	n/a

Source: Author's data. Random sample survey of households from three CBCs

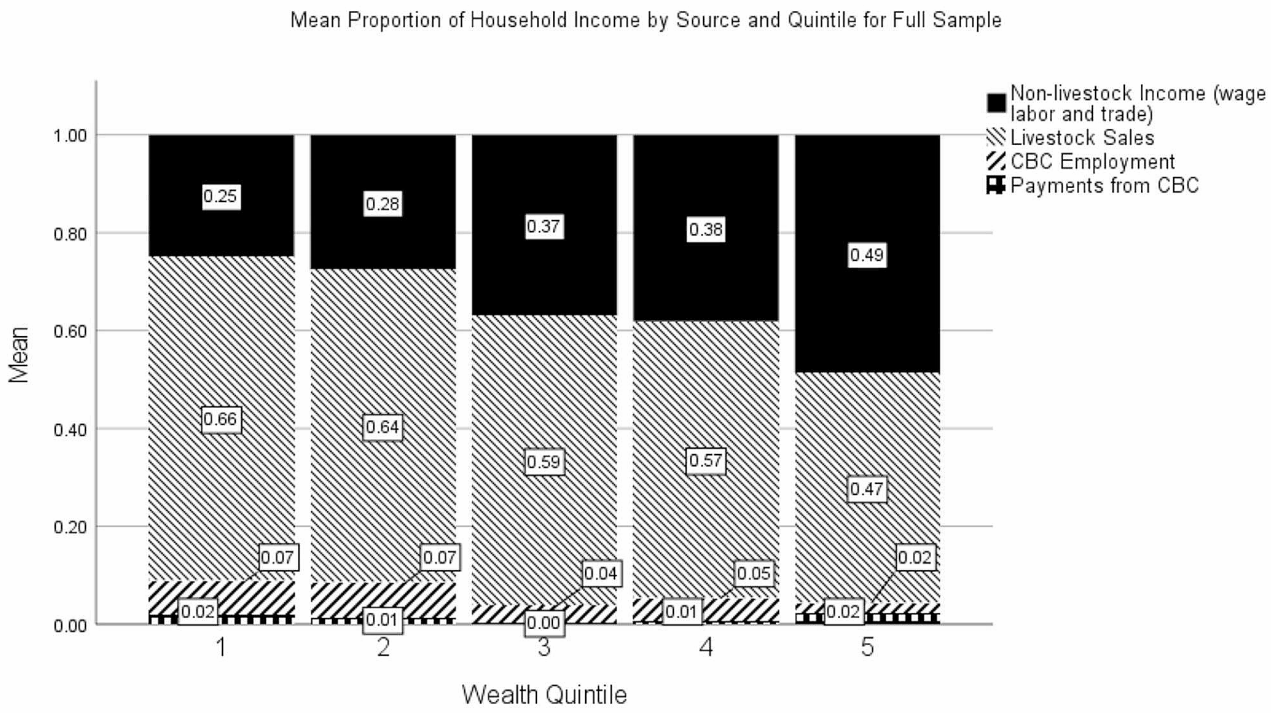

Fig. 2 Household income by source and quintile. (source: Lesorogol, 2022)

many parts of Kenya where crop cultivation prevails or where they are hunted for food (although the ban on hunting since the 1970s makes this much more difficult). Co-existence with wildlife is possible due to the extensive resource base that mitigates competition for range resources, mobility of pastoralists and wildlife, and the generally tolerant attitudes of Samburu people toward wildlife. That is not to say that there is no human-wildlife conflict in the region, and with growing human populations and more sedentarization, those conflicts are on the rise in some places. Indeed, one challenge for CBCs is dealing with increasing human-wildlife conflict as wildlife numbers grow due to protection provided by CBC core areas and buffer zones.

This discussion illustrates that many, if not most Samburu pastoralists continue to practice a form of extensive pastoralism premised on dairy production with high percentages of female stock in their herds. Mobility and species diversity are additional elements of this system that continues to idealize a pure pastoral livelihood, even if it is significantly supplemented by earning money through livestock sales, wage labor, and trade to meet growing cash needs.

The Rise of CBCs and Conservation Logic

The establishment of protected areas and conservation activity in Samburu County dates back to colonial times when the British regime declared all land in the country Crown Land and proceeded to allocate it to various people and purposes. In the north, some of these allocations included establishing government forests (often called gazetted forests) and creation of national parks and reserves beginning in the 1940s (Matheka, 2008; Kabiri, 2010; Waithaka, 2012). These forms of "fortress conservation" strictly prohibited local populations from using the resources (Brockington, 2002), although such prohibitions are only as effective as they are enforced, which can be highly variable. By the time of independence in 1963, the most significant protected areas in Samburu were the Samburu National Reserve (SNR) and gazetted forests. The SNR runs along the lower reaches of the Uaso Nyiro river, the only permanent river in the county. The protected forests are found in the highlands and also on some low mountain ranges in the lowlands. Limiting access to the river and forests places hardships on pastoralists reliant on these areas because they serve as key dry season pasture reserves. Interestingly, Samburu leaders were able to negotiate with the national government in the run-up to independence in order to obtain ownership rights to the SNR, and it has been administered by the county government rather than the national government ever since (Matheka, 2008). However, this has not meant that pastoralists have access to the SNR as it is still off limits for settlement or grazing with a few exceptions for extreme drought

situations. The SNR has been developed for safari tourism and has many hotels and camps operating within it.

The turn to community-based conservation in Samburu began in the 1990s but has taken off in the last 10–15 years, helped along, especially by the activities of conservation NGOs that have promoted the concept and brought resources to bear to establish CBCs. The full story of the origins and functioning of CBCs is lengthy and related in detail in the full study for this project (Lesorogol, 2022). Our objective here is to contrast the rationale and logic of CBCs with that of Samburu pastoralism and to draw out some of the implications regarding differential impacts and prospects. In the following, we highlight five elements of conservation logic.

CBCs prioritize wildlife conservation

As noted above, CBCs are presented as a winning solution that will benefit wildlife, biodiversity more generally, local communities reliant on livestock, national governments, and the global community. Efforts at promoting CBCs among communities often emphasize that improved land management to be achieved through CBCs will benefit livestock and pastoralist livelihoods, not just (or even primarily) to wildlife. This is reflected in management plans that identify goals such as "improving services for community development" and "improving the condition of our rangelands" alongside "conserving wildlife" (Kalama Community Conservancy, 2017; West Gate Community Conservancy, 2017). Such approaches make sense as a means of garnering community buy-in for conservation by trying to show that it will promote current livelihood practices and even enhance them. Indeed, this may even be the genuinely held belief by some who promote CBCs. Yet, the linchpin in the CBC enterprise is conservation activity centered on wildlife and, importantly, revenues generated through tourism and other conservation businesses and donor funding. Saving wildlife from decline and extinction is the driving force behind funding for conservation NGOs, and wildlife, not livestock, are what attract tourists to Kenya. Without wildlife, there would not be CBCs. This fact is not lost on CBC members, as our many discussions and interviews with them revealed. In discussing why the community had started a conservancy, an elder commented, "The reason we accepted the conservancy is that we want to conserve wildlife so that we can get tourists who will come to see them," revealing that tourism revenues are a major driving force. Another research participant clarified this point, "Yes, because people of the community have understood the importance of wildlife that they earn income from tourists;the land is preserved for the wildlife," and the intimate connection between wildlife, tourism, and income. For most CBC members, conservation is synonymous with tourism, and gaining benefits from tourism is the main reason to have a CBC. Two of our study CBCs have long-term contracts with high-end tourism enterprises and these provide the bulk of revenue to the CBC (aside from donor funding, which is also very significant). The third CBC does not have a tourism enterprise, even though it has built infrastructure for it (tented rooms, dining facility, etc.), and, as a result, has essentially no revenues and is entirely dependent on donor funding for operations. Without donor support, it is likely that CBCs would cease functioning.

It may seem obvious that community-based conservation is premised upon wildlife conservation but the efforts to present CBCs as meeting the needs of livestock-based livelihoods and to play up the complementarities between wildlife conservation and pastoralism in order to garner support for CBCs belies the extent to which conservation objectives may be in conflict with those of pastoral production. The trade-offs involved in establishing CBCs on pastoral land and their implications become clearer when considering the structure and function of CBCs, which we explore further below.

CBCs set Aside land for Wildlife Conservation

The fundamental orientation of CBCs toward wildlife conservation is manifested in the definition of a CBC as community-owned (or controlled) land where the members have decided to engage in wildlife conservation (Kenya Wildlife Conservation Act 2013). In the Samburu context (and for most CBCs in Kenya), this means identifying and setting aside areas of land specifically for conservation. In the study communities, CBCs were formed on land that had been previously adjudicated as a group ranch with collective title owned by the members. In most cases, two types of conservation areas have been identified. First is the "core area" in which livestock grazing and all other human activities are prohibited. These are the areas where wildlife are believed to be most prevalent or where potential for tourism is assessed to be high (e.g., with strong scenic or landscape appeal). Ideally, both conditions hold as the tourism enterprises should be located close to the wildlife. By designating the core area, wildlife will be encouraged to enter and stay in the area since it is devoid of human settlement, free from competition from livestock, and is patrolled by CBC rangers to ensure safety of wildlife. The second restricted land area is the "buffer zone," which surrounds the core area. Similar to the core area, most human and livestock uses are restricted in the buffer zone, but limited livestock grazing may be allowed during dry seasons or droughts. In our study communities, conservation NGOs were working with the CBCs to try to calculate the carrying capacity of buffer zones during the dry season. These calculations were

the basis for a quota of cattle allowed in the buffer zone to be grazed collectively by CBC members for a specified number of weeks. This approach draws heavily from HM ideas and will be discussed further below. The size of the core area varies by CBC. In our study communities, between about 10% and 30% of group ranch land was set aside for conservation as core areas and buffer zones. CBCs also designated areas for human settlements, in some cases requiring households to move permanently away from places they had lived for many years prior to the establishment of the CBC.

CBCs Governance Structure and Rules for land Management

In addition to setting aside land for conservation, CBCs create a governance structure and a set of rules for managing land for conservation purposes. Samburu CBCs have adopted a governance structure recommended by the Northern Rangeland Trust (NRT), the largest conservation NGO in the region that promotes, works with, and funds the CBCs. At the top of this structure is the Community Conservancy Board, which is composed of members elected from geographic zones within the conservancy (generally about 10–13 members). The board has sub-committees for Grazing, Finance and Tourism and oversees the Conservancy Manager who is a full-time, hired professional with responsibility for the CBC operations. The Manager supervises the other CBC staff including an Accountant, a Rangelands Coordinator and a Conservancy Warden (with additional staff such as Assistant Warden, Sergeant, Corporal, and Rangers). Some CBCs also have a Community Officer. The CBC governance structure has been fused with the group ranch governance body to form a single board. However, the CBC structure is far more elaborate than that of the group ranch (which only consists of an elected Chair, Secretary, and Treasurer) and has access to many more resources, such as tourism revenue, donor funds, and professional conservation activities. This asymmetry has implications for authority and power to determine how land, money, and other resources are ultimately utilized.

In accordance with setting aside land for conservation, CBCs have rules regarding what is and is not permitted in the CBC. These are primarily prohibitions against grazing in the core area/buffer zone, killing wildlife, cutting trees, burning charcoal, or collecting firewood. Our survey revealed that most CBC members are aware of these rules and claim to follow them, although there were also numerous instances of rules being broken and people being punished (usually through fines) for doing so. Although awareness of rules is high, the process for arriving at the rules or for challenging them (if that was desired) is less clear. There was no evidence of broad participation in rule setting. The main avenue for raising issues related to the CBC is through the Annual General Meeting (AGM) of the CBC/Group ranch board, which, as the name suggests, occurs once a year. In fact, during our research, the AGMs for two of the three study CBCs did not take place as scheduled due to disputes within the CBCs involving the accountability of the board.

CBCs Generate Revenues

Unlike group ranches that generally have little if any revenue, CBCs (or, at least, successful ones) generate revenues from conservation activities, primarily tourism (e.g., land rent from tour companies, bed-night fees from guests, conservation fees, vehicle fees, airstrip fees, etc.). Two of our study communities received funds annually from the Samburu National Reserce (SNR) as part of a longstanding revenue-sharing program with group ranches adjacent to the reserve. According to a formula suggested by the conservation NGO, the CBCs split any revenues received on a 60%/40% basis, with 60% going to the CBC board for community activities and 40% going to the Conservancy Manager to run the CBC. The CBC board has discretion over the use of the 60%, which is supposed to be devoted to activities that benefit CBC members. The most common way funds were used was to pay school fees for member children in secondary and higher education. Some funds were spent on health (building a dispensary and paying hospital bills for members), and one CBC paid an annual dividend of about $20 to members. The Conservancy Managers use 40% of revenue to fund CBC operations, but in our study communities, this amount is insufficient, and the CBCs continue to rely heavily on NGO funding to pay staff and cover operational costs. Although CBC board members and staff emphasized the insufficiency of revenue to meet the needs of CBCs and their members, there was a widespread perception in the communities that CBCs have significant revenues and that these are subject to misuse by board members and staff.

CBCs Create a Powerful role for Conservation NGOs

As noted, the structures, rules, and practices of CBCs are heavily influenced, even dictated, by donor-funded NGOs like the Northern Rangeland Trust (NRT). Of course, the CBC model is premised upon community ownership (of land and, ideally, of the whole notion of conservation) and community engagement (e.g., elected CBC boards, and AGMs). Our conversations and interviews with CBC members revealed a wide range of opinions about the CBCs. While there were some people who were fully convinced of the value of wildlife conservation as an end in itself with intrinsic value and who thought that improving land

management for wildlife would have positive spillover effects for pastoralism, most people seemed to accept the CBC (perhaps somewhat begrudgingly) primarily with the expectation of economic benefits from tourism. There were also people who opposed the CBC and complained bitterly about losing access to grazing land and about corruption among CBC board members and other elites. Suspicions of CBC board and staff members is reflected in this comment, "they say they will teach us to use grass better, but this is not true; it benefits the staff and board but not ordinary members." Even though bursaries for school fees are generally appreciated, they are also critiqued, as in this statement from a parent, "the bursary is the only helpful thing, but that has not been as good as expected. The lodge alone pays two million Kenya shillings [to the CBC], but the bursary benefits are small compared to the needs. His son's school costs 60,000 shillings, but he only received 4,000.

Thus, the degree to which CBC members feel a sense of "ownership" of CBCs is highly debatable. In fact, some members complained that when they did make suggestions for improving the CBC or raised questions, they were shut down: "if you raise questions, then they talk with other supporters and make them fight the others." Unfairness was also perceived in the allocation of grazing rights in the buffer zone: "cows were selected for grazing in the buffer zone, but they don't see the advantage. The board decides on who can graze there and allocates the chances. He participated in the past; he says this is a commercial enterprise (selling cattle) and doesn't address problem of all the cattle. People do not want to participate because other people are herding and they are not sure about what happened to cows." Other members voiced the opinion that poorer community members benefit less from the CBC, as a local administrator pointed out: "those people who are poor and voiceless are not benefitting [from the CBC], but they are members. It's not easy to see that they have been enrolled in benefits. The ones controlling have money." What is less debatable is the large role of donor funds (and ideas) – channeled through the Northern Rangeland Trust – from the first stages of promoting CBCs, to defining their governance structure and rules to supporting operations. NRT's own reports catalogue the many programs that they run to "serve" the CBCs from governance training to tourism contracting to natural resource management to livestock and handicraft marketing to vocational training to savings programs, and so on. NRT is not unaware of the challenges of sustainability facing CBCs, and NRT itself, as they are all reliant on donor funding. NRT devotes space to this issue in their 2020 annual report outlining plans for increasing self-sufficiency (NRT 2020). However, even if CBCs become more financially independent, that does not necessarily imply that NGO influence on the orientation and activities of CBCs will lessen.

These five elements form the "conservation logic" behind CBCs. Although Samburu pastoralists have co-existed with wildlife for centuries and tend to have generally tolerant views toward wildlife, CBCs present new ways of thinking about and interacting with wildlife and, more broadly, the world of conservation. Instead of being creatures that share the rangeland with them, usually peacefully but sometimes in conflict (and when they are in conflict, there is a fairly limited way of dealing with it by killing a problem predator using spears—not wiping out the whole species), under CBCs wildlife gain priority through privileged access to prime grazing areas. This priority needs to be accepted and respected in order to attract tourists and the accompanying revenues that are expected to bring benefits to members. Refraining from grazing, hunting or killing wildlife, cutting down trees or collecting firewood is done as much (probably more) to preserve the space for tourism as out of concern to protect the environment. Indeed, Samburu peoples' impact on the environment is relatively light—they do not engage in widespread environmental destruction and have their norms about tree cutting or firewood collection that long predate CBCs. Now, they are told not to engage in these practices in the name of "conservation" and are "educated" as to the value of wildlife, both of which are strikingly ironic messages coming from Western-funded organizations based in countries that have destroyed most of their own wildlife (outside of parks and zoos) and which certainly don't live in peaceful co-existence with them as Samburu have. This shift in orientation and practices ushered in by CBCs has several implications for pastoral livestock production, which we turn to next.

Conservation Logic and Pastoral Production

CBCs prioritize wildlife conservation by setting aside land for that purpose. At first glance, the establishment of core areas and buffer zones may appear similar to pastoralist practices of defining wet and dry season grazing areas and limiting their use according to seasons. Samburu pastoralists often designate such areas. In our study communities, local elders are responsible for defining seasonal grazing areas and for declaring them "open" or "closed" for grazing. Often, wet season grazing is found on plains and closer to settlements, where pasture grows during and following the rainy seasons. Dry season grazing areas are often located in places that retain more rainfall, such as hilly or mountainous areas, or areas close to permanent water, such as along the banks of the Uaso Nyiro river. Grazing in dry season pastures is prohibited as long as the wet season areas hold out and thereafter the dry season reserves are utilized. Community members themselves are responsible for monitoring and enforcing such grazing restrictions by observing who is

herding where and by reporting violations to the elders, who will impose a fine on rule breakers. Such seasonal grazing controls are highly localized and variable from year to year, depending on local conditions. While most herders recognize the authority of elders to manage land in this way, these restrictions are not perfectly adhered to, but on the whole, they are effective.

Core areas and buffer zones differ from seasonal grazing management in a few key ways. First, they are fixed geographic locations. That means there is no flexibility to adjust their location depending on seasonal conditions and local needs. Regardless of the timing and location of rainfall, disease, or other concerns, the core area and the buffer zone do not move. Second, the core area is permanently removed from the pastoral system (at least, in theory). No livestock grazing or other human activity is allowed in the core area. Removing thousands of hectares of land from the local grazing system is deeply inconsistent with the premise of extensive livestock production predicated on access to large areas of pasture. Furthermore, core areas are often located in highly productive areas, meaning that removing them eats into already limited dry season reserves.

Buffer zones allow somewhat more use, although it is highly regulated and limited. In two of the studies, CBCs and conservation NGOs have promoted practices from HM in the buffer zones. This includes calculating the carrying capacity of the buffer zone (a highly contested concept in rangeland management) and, from this, determining a quota of cattle (no small stock) allowed to graze for a specified number of weeks during the dry season. The cattle are drawn from member households with each household being able to send one or, at most, a few heads to the buffer zone (rather than the whole herd or even most of the herd). The herd thus assembled is then herded collectively (the NGOs pay the selected herders) and moved around the buffer zone in a rotational pattern. The idea is to have intensive grazing on a small area with the cattle bunched together so their hooves break up the soil to improve water infiltration and their dung fertilizes the area. This "bunched grazing" is conducted for a week or so in each buffer zone area with the hope that it will improve range condition. These practices—composing a herd of individual cattle from many different herds, paying herders, rotational grazing, and bunched grazing—are very different from usual practice and create several challenges. For example, many herders do not want their livestock to mix with animals from many different herds as it raises risks of disease transmission. The same concern goes with herding them in bunches where the animals are crowded together, increasing the risk of spreading disease. Trusting a hired herder from another family is also not usual practice and raises concern as to how much the herder will attend to the needs of one's cattle since they have no stake in any particular animal. There is also competition for the herding jobs among member households that can lead to conflicts. We observed the upshot of these concerns in one CBC where the quota for cattle was not met, and about half the cattle that did enter the buffer zone ended up leaving early due to disputes among the herders.

Aside from the fact that these HM-inspired herding practices depart from Samburu herding practice, their effectiveness is an open question. So far, there are no good data from these CBCs to show improvements in range conditions due to these practices. Even if there is some improvement in range condition in buffer zones, one has to wonder whether this is due to the drop in utilization due to their removal from the system for most of the year as opposed to the HM practices. In a semi-arid, disequilibrial system such as Samburu lowlands, simply resting an area of rangeland will likely result in improvements in vegetation and ground cover (e.g., that is the effect we see when areas of range are abandoned due to insecurity). Furthermore, seasonal variations in rainfall may have a greater impact than particular HM-inspired management practices. If range condition improves in the buffer zones (and the core area, again due to a drop in utilization), there is the further question of to what end? If livestock continues to be prohibited or severely restricted from utilizing these areas, then the improvement of range condition will not benefit them, anyway, belying the argument that HM practices and CBC zones have some connection to improved livestock production. Removing pieces of the landscape from pastoral production also promulgates the idea that livestock and wildlife are or should be separated for the good of the resource base. There is considerable evidence of how landscapes have been shaped by the presence of diverse species, including humans, and their interactions. For example, cattle grazing can benefit wildlife by reducing bush encroachment and helping maintain a grassland ecosystem while abandoned pastoral settlements create open glades and enrich soils and plant heterogeneity (Augustine, 2003; Gordon, 2018; Muchiru et al., 2009). Keeping wildlife separate and "protected" from people and livestock appears not to be backed by solid scientific evidence but perhaps more driven by the fortress conservation mentality and the urge to have "pristine" environments for tourism.

Removing these rangeland areas reduces the land available for grazing, putting more pressure on the pastoral system. This creates challenges for CBC members within each CBC, but it also needs to be considered in the larger scale picture of multiple CBCs, with each one trying to protect its conservation areas. In Samburu County, there are currently 9 CBCs, and across Kenya there are 39 supported by NRT, mostly in northern Kenya with a few at the Coast. The conservancies cover 42,000 square kilometers (NRT 2020: p. 3),

including a large swath of land in north central Kenya. This coverage is touted as a success for conservation, of course, but it also means that in each of these CBCs, land areas are removed from the pastoral land use system with access limited for members and, even more so, for non-members. The need to prevent outsiders from accessing grazing within the CBCs was a frequent topic of conversation during our research. In contrast to Samburu traditions (and the logic of extensive pastoralism) that allow other herders access to grazing, particularly during periods of stress, the protection of CBCs requires keeping outsiders out. Indeed, one of the main functions of the conservancy rangers (who are supposed to protect wildlife) is to prevent non-member herders from entering the conservancy. Many people complained bitterly about outsiders bringing their cattle into the conservancy and finishing the grass in the core area or buffer zones. These outsiders did not respect or were not aware of the protection in place and sometimes were armed and refused to leave even when asked to by elders or confronted by the rangers. In some cases, CBC members decided to break grazing restrictions rather than see outsiders finish the grass they had protected. In this bigger picture of the CBC landscape, each CBC is like an island with its resident population trying to keep non-members off the island. However, livestock still have to move to survive in this system, so they "hop" from one CBC island to the next, sometimes violating grazing prohibitions and consuming pasture in the core and buffer zones. To those unfamiliar with conservation logic and how it operates in CBCs, the idea of permanently setting aside land from the pastoral system is nonsensical, and they continue to operate according to traditional norms that uphold access, not denial.

Setting aside land for conservation, as imperfect as it may be in practice, does appear to have led to growth in wildlife presence in the CBCs in our study communities. More wildlife is, of course, beneficial for the promotion of tourism, but it also leads to more human-wildlife conflict. The dangers that wildlife poses to people and livestock were frequently mentioned in our interviews. Lions, leopards, hyenas and wild dogs are significant threats to livestock during grazing and at night in the settlements. Although people erect strong thorn fences around their settlements, it is very difficult to keep these predators out. The other major problem is elephants, which injure and sometimes kill people. Elephants were a concern everywhere, but particularly in one CBC where people had been growing maize and beans on small plots. Elephants had made cultivation nearly impossible since the CBC was formed as they consumed and trampled crops.

Most people we spoke to were willing to tolerate a significant quantity of human-wildlife conflict, but what upset them was the lack of compensation for losses. They understand that it is illegal to hunt or kill wildlife, even when they cause damage, but, given that fact, they want the government to cover the costs of losses of lives and livelihoods. We found that there is a procedure for making claims for wildlife-induced losses and that compensation rates have been raised in recent years. However, the claims procedure is difficult and lengthy, and we did not meet anyone who was familiar with it or had tried to use it.

The discussion so far emphasizes how changes in land use ushered in by conservation logic affect access to grazing land, land fragmentation, and human-wildlife conflict for both CBC members and non-members. A further question concerns how these changes might affect different segments of the population, for example, according to differences in livestock wealth. Livestock wealth is an important measure of well-being among pastoralists because livestock are the main source of food (milk, meat, fat) as well as a source of money (from sales) and a store of value (through the growth of herds). Our research in CBCs showed that there are significant differences in livestock wealth within each CBC community and, on average, across the communities. For example, we divided our random sample into five quintiles ranked by livestock wealth. The wealthiest 20% owned more than 50% of the livestock while the poorest 20% owned less than 5%. These differences suggest that the restrictions on grazing put in place on CBCs could have quite different effects across wealth quintiles. For example, wealthier herders require more pasture in order to sustain their larger herds. For them, the removal of the core area and buffer zone might require them to migrate further in order to find enough grazing land. In contrast, members with few livestock do not require as much pasture and thus, the restrictions on grazing might have less effect on their ability to support their herds within the conservancy. However, with the patchwork of conservancies in the region and fragmentation of land into protected areas with boundaries that are being maintained more strictly than in the past, livestock may tend to be more confined than is optimal for pastoral production.

To understand these implications by wealth, we collected data on perceptions of grazing restrictions, herding locations and migrations. When asked whether CBCs restrict access to grazing, there was a strong consensus that they do. Table 2 shows that high percentages of research participants agree that the CBC limits land access. Among the wealthier quintiles, more than 70% agree that access is limited, while a somewhat smaller proportion (60%) of the poorest quintile reports this. This difference might reflect the greater impact of grazing restrictions on those with more livestock. The second question in Table 2 is whether the respondent had broken the grazing rules in the CBCs. Overall, we see that relatively few people admit to breaking grazing rules,

Table 2 Perceptions of CBC limits on grazing access and rule breaking

Wealth Quintile	Does CBC limit grazing access? (% yes)	Have you broken CBC rules? (% yes)
Q1	73	18
Q2	77	15
Q3	61	17
Q4	73	13
Q5	60	7

Table 3 Herding locations and moves

Wealth Quintile	Herding in a Distant Location?: Yes: n (%)	Move in the Last Year?: Yes: n (%)
Q1	32 (53)	29 (48)
Q2	23 (38)	31 (52)
Q3	13 (22)	34 (58)
Q4	35 (58)	38 (63)
Q5	27 (45)	45 (75)

but the percentage reporting that they do is somewhat higher among the wealthier quintiles, with the wealthiest reporting most rule breaking at 18%. The fact that those with bigger herds require more access to grazing may explain higher rule breaking because they have more incentive to break grazing rules in order to feed their livestock.

Another indicator of the effects of grazing restriction is where livestock are herded and how often they have migrated. One of our survey questions asked if livestock were being herded close to home or far away, in a distant location. Table 3 reports the findings according to wealth quintiles. The pattern of responses does not show a clear trend. We might expect that wealthier quintiles would be more likely to herd in distant locations and to have a higher degree of migration in order to access enough pasture. What we see is that about 25–60% of households reported herding in a distant location, and about half to three quarters reported a move in the last year. More than 50% of the wealthiest herders reported herding in a distant location, and about half reported a move, but even poorer quintile households also reported doing so. A couple of factors make these data less than definitive. First, during the focal year 2017, a serious drought gripped the region, meaning that virtually all herds were on the move in search of pasture. In a more favorable year, there may have been more differences between wealthier and poorer herders in terms of the number of migrations or moves of herds. Second, when asked whether they were herding close to home or in a distant location, the distances were not clearly specified. Thus, some herds might have been herding within a few kilometers of the homestead while others might have been tens or even hundreds of kilometers away, and all could be classified as herding "away" from home. It is also difficult to capture split herds in these responses. Many households, especially wealthier ones, divide their herd into several smaller herds and move them to different locations. The survey questions did not specifically ask about locations of all different herds so there may be cases with multiple herds in different places that were not reported.

Though distances were ambiguous, many research participants commented that they were herding away from CBC buffer and core areas since grazing is prohibited in these areas. A few explained that they were not grazing in the CBC to allow wildlife to stay there. Other reasons given for moves included seeking pasture and water due to drought or dry season conditions, avoiding insecurity and livestock raids, and moving away from livestock diseases. Some people explained that they had not moved their livestock due to lack of labor or not having many animals, consistent with the idea that poorer herders are less likely to migrate.

Although there are limitations with these survey data, we know from conversations and anecdotes that wealthier herders move their cattle further and were often herding outside the CBC, sometimes for long periods. Some people told us that they had not even seen their cattle in many seasons or even for years due to the lack of enough local pastures. Thus, it is reasonable to assume that wealthier herders are more constrained by CBC grazing restrictions. At the same time, they are also the best placed to move their herds to better pastures since they generally have more herding labor and are able to divide their herds to take advantage of beneficial ecological conditions or even to lease grazing land from private landowners or purchase supplementary feed (though this is quite rare). Overall, restrictions on grazing access appear likely to have more negative effects for wealthier herders as they are forced to migrate further in search of pasture and to negotiate land fragmentation exacerbated by the proliferation of CBCs.

Our research also explored whether monetary and economic benefits from CBCs disproportionately benefited some members over others (Lesorogol, 2022). Survey participants were asked to report on any payments they received from CBCs either from employment or through benefit payments such as bursaries (school fees), assistance with hospital costs, or annual dividends (paid by one CBC). In general, levels of benefits and payments were quite small, with almost 80% of participants reporting not receiving any monetary benefit. Those employed by the CBC earned substantial income, but CBCs only employ about 20–40 individuals, limiting the overall impact of salaries. Figure 1 shows the distribution across quintiles of income from CBCs both in terms of general payments received as well as income from employment. Even combined, these payments make up less than 10% of household incomes on average.

However, the richest two quintiles appear to have an advantage in income from CBC employment, which constitutes 7% of household income compared to 4% or less for the three lower quintiles. This may reflect advantages such as higher educational attainment and/or more powerful social networks that facilitate employment opportunities with the CBCs. We also observed that in some (though not all) cases, CBC board members tended to come from wealthier and more influential families in the community. As these are elected positions, it is possible that individuals with higher social standing due to personal or family reputation, which is often correlated with wealth in Samburu communities, would have a greater likelihood of success in obtaining them.

Conclusion

Community-based conservation emerged in response to the failures of fortress conservation to effectively protect wildlife. It is premised on the willingness and ability of local communities to manage their resources not only for their own pastoral livelihoods but also for the conservation of wildlife. In northern Kenya, much of the rhetoric surrounding CBCs emphasizes that conservation activities will support and even improve pastoralism, focusing on the compatibility of wildlife and biodiversity conservation with extensive livestock production. It is certainly the case that historically, extensive livestock production, as practiced by Samburu and other pastoralist communities has co-existed with wildlife. This was enabled ecologically through the availability of range resources for livestock and wildlife, mobility as an adaptation to aridity, low population densities, and also due to cultural practices (e.g., limited hunting and virtually no cultivation) and beliefs (e.g., positive values for wildlife) that maintained wildlife in the environment. In these ways, wildlife fits into the logic of extensive pastoralism with relatively little conflict or competition. Given this history, Samburu communities would appear to be excellent sites for community-based conservation. It is, therefore, ironic that, in practice, the logic of CBCs comes into conflict with Samburu pastoralism. Regardless of the rhetoric that CBCs support pastoralism, in practice, CBCs place a high value on wildlife conservation. Removing land from the grazing system through the establishment of core areas and buffer zones and recommending HM grazing practices that depart radically from pastoral practices reduces access to rangeland resources that are critical to pastoralism. Efforts to improve the productivity of these areas (which remain largely unproven) may bring benefits to wildlife that are allowed to use them but will not have direct benefits for livestock. When areas are off limits for grazing, herders must move elsewhere to find pasture, which raises the costs of herding and may also lead to conflicts as they move onto others' land, including other CBCs that have their own grazing restrictions. The patchwork of CBCs now present in Samburu County means that herders must navigate through an increasingly complex and policed landscape in which each CBC tries to protect its land from "invaders" and "encroachers." Thus, while CBCs purport to encourage landscape level land management and coordination, in practice CBCs are contributing to land fragmentation.

Why, then, are communities continuing with CBCs, and, in fact, more communities are seeking to establish their own CBCs, even in areas that have little wildlife and seemingly little tourism potential? The answer appears to be the availability of funding for CBCs. Channeling of significant funding and NGO support to CBCs creates potential for economic gain and socio-political power through positions on CBC boards and management positions. In a region with very limited economic prospects, CBCs stand out. Rumors of massive funding are common, making CBCs attractive to those with a genuine interest in conservation and others looking for money-making opportunities. Indeed, most models of CBCs center on making wildlife "pay their way" through ecotourism and associated enterprises, thereby offsetting losses that communities experience from conservation such as reduced land access and increased human-wildlife conflict. People are encouraged to join CBCs by promises of economic benefits. There is growing evidence, including our own study, however, that economic returns to community members tend to be quite limited and are somewhat skewed in favor of the wealthy. These outcomes raise the question whether communities will continue to participate in these efforts if promised economic benefits are not forthcoming. In another irony, CBCs that are meant to promote the value of wildlife by emphasizing its economic value above all may end up eroding the intrinsic values that have served to protect wildlife within pastoral systems all along. Furthermore, the governance power that CBCs gain in communities, in no small part due to the resources that are mobilized to make CBCs function, has the potential to disrupt and distort traditional community institutions such as councils of elders that have managed people and land for centuries. Conservation logic changes the way that pastoral land is allocated, utilized, and governed. It shifts priority away from extensive livestock production toward wildlife conservation, and it brings significant resource flows to bear to achieve its objectives. The benefits and costs of adhering to this new logic are unevenly distributed within communities, and the medium to long-term results are uncertain.

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half of the late Carolyn Lesorogol and her field collaborator Prame Lesorogol.

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Declarations

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