The Consequences of Internal Migration in Sub-Saharan Africa: A Case Study

JONATHAN SALERNO, JACOB MWALYOYO, TIM CARO, EMILY FITZHERBERT, AND MONIQUE BORGERHOFF MULDER

Internal or within-state migration is common in Africa and elsewhere and has environmental and social consequences that are often poorly understood. We conducted a national-scale study tracking the movements of agropastoralists in Tanzania and documented the extent of associated environmental changes. The data were drawn from interviews with government officials in 80 rural districts covering the majority of land area across the country. According to interviewees, recent settlement is associated with forest clearing, overgrazing, and landscape burning. Conflicts such as lion killing and forced evictions of settlers often occur. Our interview data uncover limited capacity and lack of coordination among different levels of government to deal with these challenges. The novelty of our study is in its ability to draw on reports from ground-level administrators and to aggregate this information in order to both describe the impacts of rural migration over a large area and inform appropriate policy action from national-level decision-makers.

Keywords: frontier migration, agropastoralists, environmental change, human–wildlife conflict, Tanzania

The migration of human populations is widely seen as a challenge in the wake of political and environmental crises (Myers 2002, Hunter 2005, Raleigh 2011). Contemporary examples include the movement of political refugees fleeing conflicts from the Middle East and northern Africa into Europe (Albahari 2015), of environmental and climate migrants from Haiti both before and after the 2010 earthquake (de Sherbinin 1996, UN OCHA 2015), and of displaced residents leaving and returning to New Orleans following Hurricane Katrina (Fussell et al. 2010).

Human migration resulting from slow-onset environmental and climate changes, however, is actually a more common demographic process (Laczko and Aghazarm 2009). In the developing world, significant populations continue to move within and between rural and frontier areas (Henry et al. 2004, Lopez-Carr 2012), as well as to cities. In contrast to emergency environmental refugee scenarios (e.g., Myers 2002), migration in the context of slow-onset changes is an adaptive response to many interrelated social and biophysical factors (Hugo 1996, Kniveton et al. 2008, Black et al. 2011, Bettini 2013, Salerno 2016). Census data can in part document such movements, but the consequences—especially for the environment, which is our focus here—are anecdotal at best (Bilsborrow and Henry 2012). Frontier migration is well documented in certain systems (e.g., in Latin America; Painter and Durham 1995); however, there is less systematic study of the large-scale migration patterns of farmers and livestock keepers, particularly in the drylands of Africa (Henry et al. 2004, Cull and Vincent 2011), despite huge interest in expanding rural economic-growth corridors across the continent (Laurance et al. 2015).

In this article, we address the remarkable expansion of agropastoralists across Tanzania since the midtwentieth century. We examine successive migrations of households practicing sedentary farming coupled with livestock keeping rather than the nomadism that is commonly associated with true pastoralist livelihoods (box 1; Dyson-Hudson and Dyson-Hudson 1980, McCabe et al. 2010). Our motivations to investigate this national-level phenomenon stem from experience at our long-term study site in Katavi and Rukwa Regions (Borgerhoff Mulder et al. 2007). The large-scale in-migration of Sukuma agropastoralists began in the mid-1970s in this area (box 1), with most settlement occurring adjacent to Katavi National Park (Salerno 2016). In-migration has both challenged and enriched the lives of the resident Pimbwe (Seel et al. 2014) and has triggered shifts in systems of justice, food security, and marriage (Paciotti et al. 2005). Compared with the Pimbwe, the Sukuma practice a more extensive agricultural system of livestock keeping and rice cultivation. We have observed how the Pimbwe (Seel et al. 2014), the Sukuma (Salerno 2016), and their interactions (Hadley 2005, Hadley et al.

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Box 1. Tanzania's agropastoralists.

The rapid expansion of *agropastoralists*—people engaged in farming and livestock raising, with livestock grazed in open areas—is a relatively new phenomenon in Tanzania, whereas true pastoralists have long been recognized as dependent on mobility (Dyson-Hudson and Dyson-Hudson 1980). The principal agropastoral ethnic groups are the Sukuma, the Maasai, and the Datoga (alternatively known as the Mang'ati, Taturu, and Barabaig).

Among agropastoralists, livelihood strategies range from intensive agriculture combined with grazing livestock to a primary reliance on livestock combined with farming maize in small shifting plots. Together, the Sukuma (Tanzania's largest ethnic group), the Maasai, and the Datoga account for approximately 15%–20% of Tanzania's current population of nearly 50 million, but estimates vary considerably because the Tanzanian census does not record ethnicity data (URT 2013). Agropastoralists, principally the Sukuma, have remained central to national strategies of food security and economic development since the colonial period through the production of cotton, maize, rice, tobacco, livestock, and other products for cash markets (Brandstrom 1985, Galaty 1988, Madulu 2005).

The Sukuma are Bantu speakers with a historical reliance on cultivation, whereas the Datoga and the Maasai speak Nilotic languages and traditionally depend more heavily on mobile pastoralism. The Sukuma began farming cotton in the 1940s, encouraged by the wartime colonial government and high global demand (Malcolm 1953). Cash-crop profits were invested in cattle, the acquisition of which over a family's lifetime became increasingly central to Sukuma society. Sedentary farming coupled with raising large herds of livestock, however, strains limited local resources, and in response to population growth, the Sukuma began a pattern of successive migrations from northern Tanzania in the 1950s (Galaty 1988, Madulu 2005). The pattern continued in subsequent years following tobacco production in the central regions of the country. Recurring droughts placed additional strain on livelihoods and resources, leading to increased rates of migration. Historically, Sukuma society maintained a diffuse but strong system of social organization, which linked distant families and communities through a hierarchy of clan membership and governance (Abrahams 1967). These institutions remain active (Paciotti et al. 2005) and, along with relatively high agricultural productivity and population growth and a high degree of prosociality (Hadley 2005), likely facilitate their extensive ongoing expansion and economic success.

The adoption of agriculture among some Datoga and Maasai became widespread beginning in the 1970s (Rekdal and Blystad 2000, McCabe et al. 2010). This resulted from settlement policies enforced by the central government, land-use restrictions following the establishment of protected wildlife areas, and increased vulnerability of livestock due to drought, disease, and increasingly, climate change. Similar to Sukuma, both Datoga and Maasai societies are structured by strong kin and political networks. Together, these institutions facilitated migration from their northern Tanzanian homelands. Presently, the Datoga and the Maasai remain more reliant on livestock and less engaged in crop production than the Sukuma.

More generally, rapid population growth persists in Tanzania, particularly among agropastoralist groups in which fertility remains high (Hadley 2005, UN DESA 2013, URT 2013). Pushed by population growth and declining natural-resource availability and soil fertility, rural migrants repeatedly move into new areas of lower human density, as has been documented in recent years (Estes et al. 2012, Salerno et al. 2014). These movement patterns often result in settlement adjacent to protected areas, which cover approximately one-third of terrestrial land, among the highest proportion of countries in Africa (IUCN and UNEP 2015).

2007) have changed over the years, and our observations parallel those from a research site farther south in the Rukwa Valley with respect to major environmental, political, and social changes (Brockington 2001, 2006).

To set these anecdotal observations in context, we took a national-scale snapshot of the potential implications of this extraordinary westward and southward expansion of agropastoralism as households move from origin areas to more productive destinations of lower population density (Salerno et al. 2014). To this end, we conducted interviews with government officials across most of the affected rural districts in the country. We present these data as an attempt to shift the focus of migration research to national-scale outcomes, which is important both for describing the scope of migration and for informing appropriate policy action. Policy initiatives rest heavily on observations, perceptions, and knowledge within natural-resource management circles (Caro and Davenport 2016); therefore, there is value in aggregating this information from midlevel government officials and field officers to inform the national-level policy process.

The data we present here track the dramatic extent of the expansion of agropastoralism across Tanzania and how it is perceived by government officials in terms of forced evictions of settlers (e.g., Homewood and Brockington 1999), conflicts with lions (*Panthera leo*; e.g., Hazzah et al. 2009, Packer et al. 2011, Fitzherbert et al. 2014), and forest clearing and landscape burning (e.g., Galaty 1988, Borgerhoff Mulder et al. 2007). We illustrate the extent of the perceived impacts associated with agropastoralist mobility and the challenges to village- and higher-level authorities to adapt to such changes. Then, we discuss the expansion in terms of contemporary issues of biodiversity conservation, resource-management policy, food production, and economic development. In so doing, we highlight the varied and complex challenges of agropastoralist migration (Charnley 1997). We conclude by arguing that Tanzania and other states must acknowledge, respond to, and, most importantly, plan for

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internal migration in order to protect their environment and foster development goals in the coming decades.

From the outset, we recognize that migration, eviction, and displacement are hardly new phenomena in Tanzania. For example, colonial agricultural programs (e.g., the infamous groundnut scheme) encouraged agricultural expansion and the conversion of tsetse-fly-infested forest into cultivated lands (Allan 1965, Matzke 1979), the postindependence relocation policy of Ujamaa disrupted much of village life in the mid-1970s (Scott 1998), and the creation of conservation areas caused displacements both in the colonial era (e.g., Seel et al. 2014) and more recently (Homewood and Brockington 1999). In this article, we focus on yet another significant population shift, the expansion of agropastoralism, which has received scant attention among conservationists and policymakers thus far.

Bear in mind, however, that our goal is not to sensationalize the inevitable ecological change attendant on such population shifts but to document its timing, to describe its perceived consequences, and to discuss associated challenges. We do this purposefully through the perceptions of midlevel government officials and field officers recorded by JM, because these officials are ultimately the conduits to national policy, more so than are expatriate researchers. We appreciate the long history of mistrust between governing bodies and pastoral and agropastoral communities; this, in our opinion, does not so much bias our findings as reflect contemporary reality.

Tracking in-migration and impacts through interviews

We limited our study to areas containing native and/or in-migrant agropastoralist populations. Prior to research activities, permission was obtained from the Tanzania Commission on Science and Technology and the regional and district administrative secretaries. Between 2009 and 2011, JM visited 80 rural districts and administered structured questionnaires to district forest, game, and natural-resource officers. The questionnaires consolidated data from official reports, which are typically submitted to the district from village representatives or field officers, yielding information on the history of agropastoralists in the district, their livelihood activities, and associated environmental and economic impacts. The questionnaires also asked the respondents questions in order to further explore specific cases of environmental and social conflict pertaining to lion killing and the forced evictions of migrants. In addition to aggregating data from official reports and responses to questions, JM recorded the officials' general perceptions of challenges associated with natural-resource management in the district. Although these data include local-level reporting, they also rely on the responses and perceptions of district-level officials. We acknowledge the limitations of assessing the consequences of migration through these interviews, but we reiterate that the data reflect the official reports and views on which local, district, and national land-management policy is based, thereby adding texture to our account.

The interviews were conducted in 80 rural districts covering the majority of the land area across the country. We focused on districts receiving in-migrants, as were identified by preliminary phone interviews with appropriate officials or other key personnel. As such, we did not sample urban districts according to the National Bureau of Statistics (NBS) census designation nor districts consisting of predominantly pastoral populations and limited opportunities for cultivation (e.g., the almost exclusively Maasai areas of northern Tanzania). The interviews were conducted in approximately 78% of all rural- or mixed-classified districts, although the total number of districts was uncertain because NBS was undertaking reclassification of enumeration areas.

Thirty-five of the 80 visited districts contained native agropastoralist groups, whereas the remaining 45 held in-migrant agropastoralist populations as well. Data from the interviews documented the expansion originating primarily from north-central and northeastern Tanzania prior to the 1960s (figure 1) and progressing outward to the east, west, and south. The Sukuma, who historically inhabited areas to the south of Lake Victoria, were the most common nonnative group (reported in 53 districts), followed by the Datoga (31) and the Maasai (30); additional smaller in-migrant groups were also present (e.g., the Gogo, the Parakuyo, and the Nyamwezi). The officials in 54 districts stated that they observed persistent population increases due to in-migration.

Agropastoralist expansion is characterized by the cultivation of cash crops, principally maize and rice, as well as by the search for grazing land for livestock. Only 14 districts reported agropastoralist business activities outside of selling cash crops. Nearly all the district officials (93%) cited positive economic impacts of agropastoralists moving to the area, namely increased agricultural production, availability of livestock products, and tax revenue. Nonetheless, they also noted costs. The officials reported violence between residents and migrants commonly resulting from incidents of livestock destroying crops or damaging water sources. Land was often illegally sold to newcomers by village officials from within common-use areas (e.g., village forest reserves) or protected areas (e.g., wildlife management areas). In general, when such conflicts over land escalate at the local level, district governments intervene to settle disputes and sometimes forcibly remove livestock and/or households (Brockington 2001, 2006). The interviews recorded reports of prior forced evictions of agropastoralists conducted by district government or military personnel in 35 districts. Evictions persist under various guises, as was demonstrated by the 2013 antipoaching effort, Operation *Tokomeza* (destroy), which evicted agropastoral households settled adjacent to Katavi National Park and was ultimately terminated by the government for alleged human-rights abuses.

In addition, widespread environmental impacts were noted. A majority of the district officials stated that wetlands, forests, and riverine environments were damaged because of agropastoralist livelihood activities (74%, 73%,

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Figure 1. Agropastoralist expansion from historical extent to the present: (a) districts reporting the presence of native agropastoralist groups (dark gray), districts reporting no native agropastoralists in significant numbers (light gray), and districts where no data were recorded (light stippling); the expansion of agropastoralist groups from native areas outward as of (b) 1962–1983, (c) 1984–2001, and (d) 2002–2011. At the time data were collected in 2011, the officials in all districts reported the presence of significant populations of agropastoralist groups.

and 65%, respectively), whereas fewer districts (30%) experienced negative effects on grasslands. Livestock keeping was stated as contributing to general environmental change in nearly all the districts (85%), and negative environmental effects from maize and rice farming were also commonly reported (67% and 41%, respectively). We asked the officials to subjectively rank the impacts of tree cutting, forest and grassland burning, and hunting (figure 2). The responses indicated widespread, extensive impacts of tree cutting (figure 2a) and burning (figure 2b) concentrated in the central and western districts of the country. The officials reported that illegal hunting was less of a problem (figure 2c). Extensive tree cutting in particular appears to occur in agropastoralist origin areas in the north, as well as in the western districts of most recent arrival (figure 2a).

Our findings and our own field observations in western Tanzania demonstrate that in-migrants are often forced to settle adjacent to villages and existing cultivation zones and to clear forest for their farms, and they continue clearing for fuelwood, timber, and accessible grazing land as families become established (Galaty 1988, Borgerhoff Mulder et al. 2007, Salerno 2016). Further in-migration into an area combined with the intrinsic growth of both residents and migrants exacerbates these effects. We acknowledge that government officials are frequently motivated to blame in-migrant livestock keeping groups for environmental damage. This is especially true insofar as accusations of environmental damage can be used as a tool for political gain by officials and resident farmers alike (Brockington 2006). Nevertheless, the environmental narrative and its biases demonstrate how the challenges of in-migration are observed on the ground, and such perceptions influence larger-scale policy decisions (Caro and Davenport 2016).

Tanzania's landscape of protected areas influences the expansion of agropastoralists, and human settlement near the borders of parks and reserves results in frequent conflicts with wildlife (Salerno et al. 2016). Our interviews focused specifically on conflicts with lions (*Panthera leo*), because predation on livestock and people sometimes occurs outside protected areas and because of the tradition of lion killing among the Sukuma (Fitzherbert et al. 2014), the Maasai (Hazzah et al. 2009), and the Datoga (Tomikawa 1978). The district officials recorded conflicts between lions and agropastoralists, but they were not specific to in-migrants versus residents. Records identified 132 people killed by lions in 27 districts between 2004 and 2008 (figure 3). During the same period, 134 lions were killed by people. Similar high frequencies of lion conflict were identified in central and southern districts (Packer et al. 2011), and importantly, our data show that these conflicts extend into the western regions as well. Although lion killing is frequently retaliatory following predation on livestock (Hazzah et al. 2009), the officials in 15 districts also reported nonretaliatory hunting, which is again consistent with our Katavi–Rukwa field data (Fitzherbert et al. 2014). Official records likely underestimate the number of incidents, because these typically occur inside or near protected areas and households fear government intervention. As areas at the borders of parks and reserves continue to be settled by in-migrant and growing resident populations, conflicts are likely to increase, with negative consequences for both people and wildlife (Fitzherbert et al. 2014).

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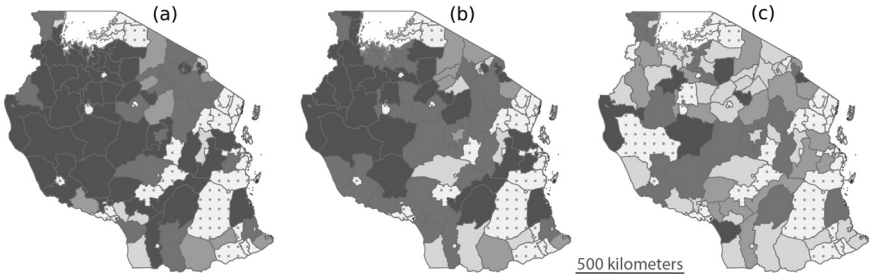

Figure 2. Perceptions of the extent of environmental impacts associated with agropastoralists: (a) tree cutting, (b) the burning of forest and grassland, and (c) hunting. The district officials ranked impacts as* extensive *(slate gray),* moderate *(dark gray),* little *(medium gray), or* a nonissue *(light gray); stippling indicates no data.

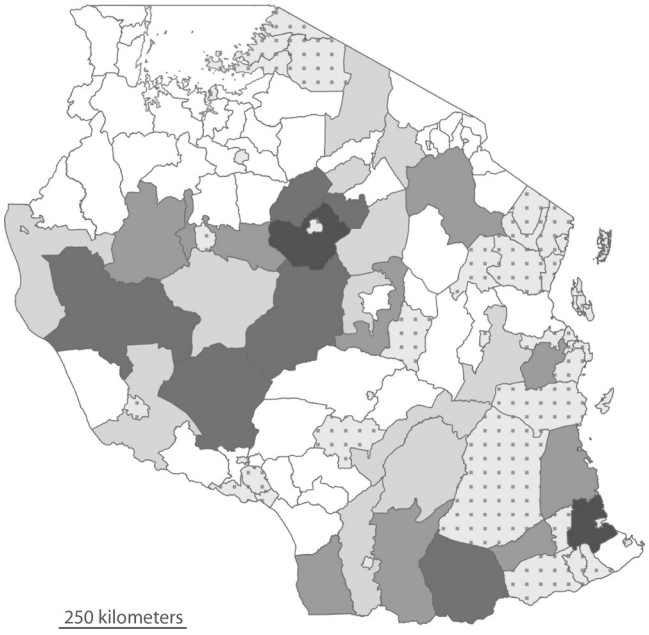

Figure 3. The reported number of people attacked by lions resulting in injury or death, 2004–2008. The number of attacks per district ranged from 0 to 77: no attacks reported (white), 1–4 (light gray), 5–8 (medium gray), 9–28 (dark gray), and 29–77 (slate gray); stippling indicates no data.

During our interviews, the officials were given the opportunity to offer unstructured comments on significant natural-resource challenges that they face. Unsurprisingly, their comments highlighted issues of population growth, limited environmental resources, and the challenges posed by in-migration (table 1). Tanzanian law permits new settlement on village lands following permission from village leaders, but this is rarely withheld (and sometimes purchased), or settlement occurs in areas of unclear village zoning. For example, in the areas with which we are familiar, such illegal purchase of land from village officials affects the management of settlement and resident–migrant relationships (Brockington 2001, 2006). Indeed, the district officials concurred that in-migration to many areas was uncontrolled. In terms of governance and lack of management capacity, officials highlighted problems of coordination and support between different levels of government, including central authorities, district councils, and village leaders. Although many of our respondents supported decentralization of natural-resource management, they emphasized inconsistent central government support for the various forms of community forest and wildlife policy (e.g., Nelson and Blomley 2010). In many respects, their concerns echo calls for polycentrism of natural-resource governance (Nagendra and Ostrom 2012). In addition, the resource-management officers frequently complained of insufficient funding to conduct assessments and create management plans, to patrol conservation areas for illegal use and settlement, and to provide services and support to villages, as well as extensive delays in the approval of district land-management plans.

Implications of the expansion

In the 1990s, an anthropologist working in the southern Tanzanian watershed of the Great Ruaha River made cautionary predictions about the nation's mobile population of farmers and livestock keepers and the future of the environment (Charnley 1997). These predictions were specific to the repeated, or "leapfrog," migrations of households who settle to farm and graze livestock but then move on after years of extensive, unsustainable livelihood practices (see also Malcolm 1953, Galaty 1988). Charnley (1997) went further by linking together issues of mobility, agropastoralism, broad demographic patterns, food production, and national economic policy. She described a "cascade effect" of environmentally displaced people causing large-scale environmental change to be transferred elsewhere, to be translated into new forms, and to increase in complexity.

Although alarmist environmental scenarios can serve to reinforce prejudices and biases on both sides of the (unfortunate) people-versus-nature debate, the data we present through the mapping and records of district-level reports clearly support predictions of large-scale ecological and social change. Specifically, we found that extensive in-migration has occurred throughout most of Tanzania in the last 60 years and extends from regions in the north to the western and southern borders of the country, with clear ecological consequences (figures 2 and 3). We stress that agropastoralist settlement, when placed in historical and socioecological context, cannot be directly blamed for observed environmental changes. Indeed, the situation involving agropastoralist conflict that Charnley (1997) predicted for Usangu has been greatly exacerbated by land

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Table 1. District officials discussed the problems or challenges of resource management. The officials in 31 districts chose to elaborate on issues of resource management in relation to agropastoralist livelihood activities, which were recorded as open-ended responses during interviews. The issues discussed were subsequently placed into four general categories. The responses from single officials often contained multiple issues and so were separated where appropriate.

Issue	Number of districts stating	Example statements
Recent agropastoralist in-migration	20	"Because there is no coordination between sectors, there is very little control of movements of people and cattle." (Ngara) "Sukuma and Datoga are fighting around the community wildlife management area." (Iringa Rural) "There are no animals due to the invasion of the protected area." (Kibondo) "Lions may be hunted [by agropastoralists] for commercial reasons in this district." (Mbulu) "At this time, Sukuma are killing [resident] farmers to get land… Government used [police] and 15 trucks to take cattle to the District Executive Director." (Kilosa) "Due to encroachment and invasion of the fragile area of the ecosystem, the wildlife populations are decreasing." (Meatu)
Lack of capacity and funding for district-level officials	15	"The challenge is [insufficient] funds and transport." (Misenyi) "Labor force, equipment, rising population, political issues, and lack of funds are all issues." (Mwanga) "Challenges faced in this district are poor response from villagers in support for conservation and lack of funds to provide extension education." (Maketa)
Coordination and support problems between levels of government; limited capabilities of village government	10	"Tribalism is a problem, and [local] communities are given more power than they can handle." (Kiteto) "Poor communication between district and central government, and no commitment from latter." (Mbarali) "No support from central government, and for the District Council, conservation is not a priority." (Bukombe)
Population growth and limited environmental resources available to villagers	6	"The main challenges are increased pressure on demand of natural resources." (Arumeru) "Population increase is causing the [environmental] problems, and education is poor at the community level." (Monduli)

grabbing by local elites (Greco 2015), as well as by evictions resulting from watershed-management policies under the auspices of supporting river flow upstream from the Mtera hydroelectric dam and national power demand. In a sense, Tanzania is running out of unsettled land, and difficult choices need to be made. Increasingly, forests and grasslands free of human influence exist only in protected national parks and reserves.

Although population movements can trigger adaptive responses, as incoming farmers manage lands and adapt their livelihood strategies to new environments (Allan 1965), large-scale migrations throughout Tanzania are radically altering land-use patterns. This clearly affects the provision of ecosystem services as a result of heavy deforestation and at the same time boosts economic productivity, but only for some (Charnley 1997, Greco 2015). These gradual but persistent changes associated with the agropastoral expansion pose major challenges for resource managers, along with the more immediate concerns arising from wildlife–human conflict, as has been exemplified by lion attacks on people and lion killing by people (Hazzah et al. 2009, Packer et al. 2011, Fitzherbert et al. 2014).

Wildlife conflict is one of many challenges facing natural-resource management around the borders of protected areas. People experience restrictions on resource access and use from strictly protected areas (e.g., national parks), which negatively affect livelihoods (West et al. 2006). Community reserves are often sited adjacent to strictly protected areas, but overextraction or illegal harvest from reserves is common because of the absence of effective village-level resource rules or enforcement (Martin and Caro 2013). To address these challenges, national policies to support community-based resource management are in place, namely community-based and joint forest management and wildlife management areas (see Pailler et al. 2015, Salerno et al. 2016). Despite some successes, these strategies are not designed to address the broader national-level challenges of in-migration nor to adequately equip communities with the means to manage their areas independently. Our data highlight these institutional limitations by cataloging numerous forced evictions of agropastoralist in-migrants, illegal settlement and conflict between people within community areas, and administrative challenges (table 1).

Interestingly, we uncovered widespread frustration from district officers, many of whom were recent graduates from Tanzanian universities with strong aspirations for improving environmental policy. Many of the respondents stated that no resource-management plan was in place at the district level. Such plans specify the rules for the harvest of wildlife, fuelwood, timber, and trees for charcoal from district-controlled land. Some of the officials went further to describe institutional inertia present within district governments, which prevented individual officers from taking action on planning and resource policy.

A separate issue is that district offices are also meant to oversee and support village resource management. It is the village governments who control the majority of land, including areas designated for new settlement, farming, and

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grazing. Village governments must manage growing populations of in-migrants and residents alike, but they often lack the capacity to perform effectively. In practice, villages receive little district support for important steps such as writing resource rules into law and demarcating boundaries separating community forest and pasture from land for farming and settlement. Very often, the result is unrestricted land clearing and resource use, leading to migrant–resident conflicts and evictions. Furthermore, we have witnessed cases in which district survey maps of village settlements are claimed to have been lost and new landowners settle on land held by existing residents. Unsurprisingly, mistrust grows. Environmental stewardship can mean very different things among villagers and officials from all levels of government and can be manipulated for political gain (Brockington 2006). Coordinated policy that recognizes the magnitude of the demographic shift should be a high priority for the new state government elected in 2015.

Tanzania's population is projected to double by 2035 to approximately 100 million, making it the fourth most populous country in Africa by 2050 (UN DESA 2013). How will Tanzania continue to make gains toward greater well-being and improved food security and nutrition as the population grows? This question is central to state policies and the efforts of diverse multilateral development initiatives to increase domestic agricultural production. Smallholders have been key to national strategies of food production and economic development since before independence (Allan 1965, Malcolm 1953, Brandstrom 1985). Although the current state policies maintain an explicit reliance on smallholders, much of the development agenda involves integrating small-scale household farms with large-scale agriculture and foreign investment. Current large-scale initiatives, such as the Southern Agricultural Growth Corridor of Tanzania, link developing country governments with multilateral donor organizations and multinational agricultural companies (Laurance et al. 2015). Such programs are accused of mismanagement, the illegal appropriation of occupied lands and eviction of residents, and environmental malfeasance (Bergius 2015, Curtis 2015). Our study shows that mobile agropastoralists must feature prominently in these large-scale efforts, but the issues of rural migration and agropastoralist food production remain largely absent from strategies of food security and economic development.

Policies regarding Tanzania's biodiversity conservation, natural-resource management, and agricultural development are often formulated and carried forward in partnership with multilateral donors and international development and/or conservation organizations. However, the absence of multidisciplinary migration research conducted at the same national scale goes unresolved. Those efforts that do attempt to match the scale of research on migration dynamics to policy commonly employ satellite and/or census data (e.g., Estes et al. 2012, Salerno et al. 2014), which fail to capture the realities facing policy implementers and resource managers on the ground and the perceptions thereof. Our approach highlights these shortcomings, and in addition, our interviews uncovered administrative challenges, namely lack of resources and institutional barriers preventing district offices from writing management plans, making decisions, and conducting activities such as supporting participatory resource governance at the village level.

Future research and policy efforts should pay particular attention to differences in how government officials versus mixed migrant–resident communities perceive and respond to ongoing changes, thereby working to counter a degradationist narrative that is often promoted by the state. These efforts should include quantifying the links between changes in origin and destination areas. Throughout its history, Tanzania continues to experience challenges in dealing with mobility and with resource policies of the state failing to serve the interests of the people. However, this history has also been characterized by exceptional ethnic tolerance and livelihood resilience, which we hope will ultimately characterize changing migrant–resident communities in the future.

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Jonathan Salerno (jonathan.salerno@colorado.edu) is a postdoctoral researcher in the Environmental Studies Program at the University of Colorado, in Boulder, and was formerly a PhD student at the University of California, Davis, where Tim Caro is a professor in the Department of Wildlife, Fish, and Conservation Biology and Monique Borgerhoff Mulder is a professor in the Department of Anthropology. They study ecology, human behavior, and conservation in Tanzania. During the period of study, Emily Fitzherbert was a postdoctoral researcher at the University of California, Davis, and at the Wildlife Conservation Research Unit at the University of Oxford, in the United Kingdom. She worked closely with Jacob Mwalyoyo, who

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