CHANGES IN LIVESTOCK MOBILITY AND GRAZING PATTERN AMONG THE HAMER IN SOUTHWESTERN ETHIOPIA

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ABSTRACT Different Ethiopian regimes have encouraged pastoral people to adopt a settled way of life and to practice agriculture. Despite these efforts, pastoral people in Ethiopia have maintained their mobility in search of better pastures and water for their livestock. This paper examines changes in livestock mobility and grazing lands among the Hamer during three regimes. The data discussed in this paper were collected during ethnographic field research using a participant-observer approach, as well as focus group discussions held in different villages across the district. The Hamer have experienced several significant changes over the course of different regimes: Distance to camp herds (i.e., livestock kept at distant camps near grazing areas) has increased, leading to less frequent visits to village camps, and mobility between camp herds has increased in frequency due to livestock population growth and increased competition. Additionally, rain irregularities and shortages have led to the use of livestock enclosures, while changes in mobility patterns over the last eight decades have resulted in increased encroachment into territories beyond Hamer jurisdiction. Disruptions in rainfall and shrinkage of grazing land have also rendered preexisting alliances vulnerable to conflict. Analysis of these changes suggests that land policies favoring settled agriculture in the Hamer District promise to limit herd mobility in the service of grazing in the years ahead.

Key Words: Change; Farming; Grazing; Livestock; Mobility; Hamer.

INTRODUCTION

As a production and resource management system, pastoralism has shown remarkable resilience in many parts of the world, and is the most dominant form of land use in the dry lands of sub-Saharan Africa, including Ethiopia (Ibro et al., 2004). The many millions of pastoralists who inhabit Africa's dry lands and the often-vibrant economies they sustain are testimony to the resilience of pastoralist livelihood systems, but these systems are also very vulnerable. Populations are increasing, the climate is changing, and international markets are setting ever-higher access barriers. In such environments, providing good governance and service becomes increasingly challenging where infrastructure is absent and competition for scarce resources is high (UNOCHA, 2007).

Pastoral communities in the dry lands of eastern Africa, where climatic shocks such as droughts and floods have increased, are increasingly vulnerable to food and livelihood crises. However, the persistent cycle of inappropriate policies and practices in the region is the most important contributor to local problems. Indeed, policies that are neither consistent with the pastoral systems' needs nor responsive to its uniqueness are primarily to blame for pastoral vulnerability (Humanitarian Policy Group, 2009: 1–4).

Hence, a problem common to a number of East African cattle-herding societies is the increasing imbalance in the ecological systems on which they are based. Animal and human populations are growing even as the pastoral resources on which they depend are diminishing, both in terms of grazing area and range productivity (Helland, 1977). Although infrastructure improvements are ongoing, pastoral and agro-pastoral areas in Ethiopia still experience inefficient access to and delivery of public services. However, important institutional efforts to allow pastoral people's concerns to be heard nationwide have also been implemented. One such initiative is the Pastoral Affairs Standing Committee, which was established in 2002. According to Morton (2005: 13), although the committee has been formally granted substantial parliamentary oversight authority, it is nonetheless dependent on the government.

THE HAMER CONTEXT

Changes in development paradigms and state policies have affected pastoralist livelihoods in southwestern Ethiopia. The ethnicization of geographic territories and the demarcation of boundaries threaten the pastoral lifestyle in this diverse and multiethnic region of the country. Additionally, the division of pastoral territories has had significant jurisdictional and political implications in terms of inter-state disputes and political manipulation (Nori et al., 2008: 5). Such problems are equally relevant to the emerging situation in South Omo Zone. Negotiations for rangeland resources have traditionally been integral to interactions among pastoralists, as well as between pastoralists and farmers. However, as the state increasingly claims property rights to the land and establishes policies that promote settled agricultural practices, the norms that support a culture that encourages mutual interaction in the service of maintaining conflict-coexistence relationships are weakening. Fluid boundaries that support such mutual interaction are being replaced by new political boundaries that, combined with the physical infrastructure, restrict access to common grazing areas and simultaneously allow individuals to claim ownership of resources. Hagmann & Mulugeta (2008: 24–26) criticized state-led development programs for undermining communal land tenure traditions in Ethiopia, arguing that ethnic federalism and other public policies have promoted sedentary lifestyles based on permanent and less-flexible territorial boundaries.

Desta (1999: 22) noted that development of the Ethiopian rangelands began relatively late, and was complicated by internal and external conflicts. He argued that the conventional top-down approach to development has not been effective in fostering the desired changes in pastoral livelihoods; instead, conflict has prevailed. Of particular note is the pattern of frequent Hamer-Dassenetch disputes. In contrast to its approach toward other farming and agro-pastoral neighbors (i.e., the Benna and Ari), Hamer society has historically engaged in conflict with the Dassenetch and other pastoral groups. This differential treatment of non-Hamer peoples may be due to competition for grazing resources and retaliatory acts for past disputes.

Similar to other pastoral groups inhabiting the Horn of Africa, the Hamer must develop effective strategies to deal with various challenges that threaten their live-

lihood. Towns have expanded with the establishment of roads, resulting in changes in land use and an influx of non-Hamer settlers. Moreover, intensification of the existing farming system and establishment of enclosed grazing areas appear to be increasing. Recurrent droughts and lack of rainfall have forced the Hamer to move with their livestock to locations near camp herds that are far from their traditional territory. Coupled with arms proliferation, competition for pasturelands has affected intra- and inter-ethnic relationships. My research is a detailed examination of the changes that have affected rangeland resource use and herd mobility patterns among the Hamer. This study also examined the impact of grazing and farm enclosures on livestock mobility.

RESEARCH METHODS

This study relied on both primary and secondary sources. Primary data were collected through ethnographic field research using a participant-observation approach, supported by interviews and focus group discussions, in different villages across the district. Purposive and systematic sampling techniques were used to ensure participant representativeness and agro-ecological diversity. Structured and semi-structured questionnaires were introduced into the overall survey to generate quantitative data, and personal life experiences were collected via in-depth interviews. In an effort to minimize the limitations of this research and maximize the validity of the results, personal observations, various communications, and documents were reviewed to provide triangulation and crosschecks. These measures further ensured that participants were thoroughly briefed on the nature of the research and could provide informed consent.

THE STUDY AREA

The research was conducted in southwestern Ethiopia, in the Hamer District of the South Omo Zone, about 3 km northeast of Turmi town. The Hamer, who speak the Omotic Hamer language, keep cattle and maintain farm subsistence plots. According to the Central Statistical Agency report (2008), the Hamer population was 59,160. The Erbore, Beshada, and Kara also reside within the Hamer District, which is bordered by the Ari, Benna-Tsemay, Mursi, Dassenetch, and Nyangatom ethnic groups.

Elders claim Hamer territory is located between the Keskie and Balah Rivers in the district. These geographic features define territorial jurisdiction and mark the site for the rite of transition into adulthood. According to the Hamer pastoral development office, the district has 8,865 ha of arable land and 225,434 ha of grazing land. The forest area accounts for 10,000 ha that, when combined with area covered by bushes and shrubs, totals 250,939 ha. The highlands are suitable for farming and receive more rain than do the lowlands. The agro-ecology can be characterized in terms of wet/dry terrain, encompassing the following: Dry highlands, 8%; partially dry lowlands, 37.5%; dry lowlands, 54%; desert, 0.5% (PDO, 2005).

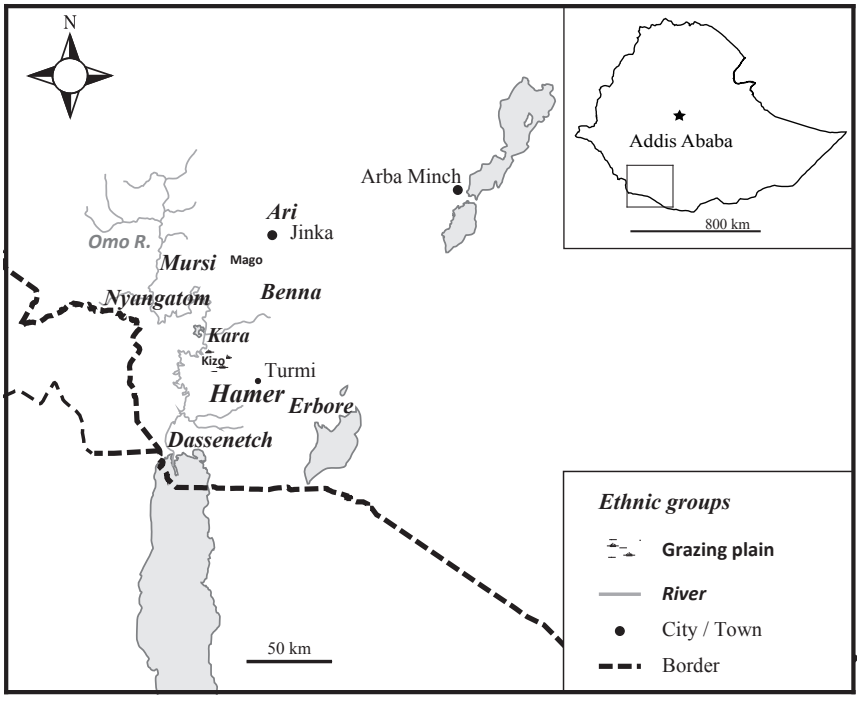

Fig. 1. Map of research area.

RAINFALL AND THE HIGHLAND–LOWLAND DICHOTOMY

Table 1 presents data on the rainfall for the Turmi region by year; the table reflects irregularities as well as incomplete data for 1996, 1997, 1999, 2003, 2005, 2006, and 2007.

With the exception of November 2006, the highest levels of precipitation occurred in April. According to data for January, February, March, and April (Fig. 2), the maximum rainfall recorded during the past 15 years was below 250 mm. The irregular and unpredictable rainfall might have led to increased mobility and the use of grazing enclosures. Data for January, February, March, and April were selected for analysis due to their proximity to the onset of the farming and wet seasons, during which the amount of rainfall is crucial for determining the availability of pasture and the projected productivity of farming.

Those who fail to plant in January must do so during February to avoid the need to replant; February planters must therefore rely on the rains in March to ensure good growth. In general, the rainfall from 1993–2011 was not sufficient to support agricultural production. During the summer of 2011, for example, the majority of the people in the lowlands moved their village herds to join their camp herds (i.e., livestock kept at distant camps near grazing areas), leaving few or no livestock at home. Although complete rainfall data were not available for 2010 and 2011, my informants reported that the lack of rain during these two

Table 1. Rainfall data of Turmi region from 1993–2009

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1993	39.6	63.6	4.2	19.2	85.3	23.0	0	0	16.0	9.7	17.0	15.0
1994	7.0	4.8	85.3	83.2	107.1	4.0	2.0	35.0	11.0	28.4	92.5	0
1995	0	31.9	50.5	76.5	95.6	20.0	37.4	11.0	15.0	27.0	23.0	26.0
1996	38.2	23.0	0	406.7	39.6	113.9	25.6	76.8	40.5	30.2	82.3	n.a
1997	0	0	n.a	0	100.7	0	0	0	9.0	45.8	283.1	271.1
1998	20.3	0	61.9	76.7	28.6	0	60.4	40.2	6.5	36.4	0	23.4
1999	35.5	4.5	24.9	75.3	54.3	0	0	34.6	15.0	155.7	104.3	n.a
2000	1.1	0	79.1	192.8	0	11.9	28.0	6.8	65.2	121.0	31.3	0
2001	84.1	25.8	78.1	224.0	366.1	0	0	0	2.6	76.4	116.4	284.3
2002	10.5	6.6	88.5	412.1	310.5	0	0	92.8	4.0	18.8	30.3	160.0
2003	59.3	8.9	8.6	130.7	34.7	n.a	n.a	n.a	n.a	n.a	n.a	n.a
2004	35.6	14.2	211	130.1	95.9	0	0	58.2	0	90.4	496.7	74.5
2005	42.9	68.2	113.4	69.4	43.2	n.a	n.a	n.a	n.a	n.a	n.a	n.a
2006	20.5	3.2	27	23.5	10.5	8.2	11.2	n.a	n.a	n.a	n.a	n.a
2007	15.7	0.3	26.1	18.0	21.3	n.a	n.a	n.a	n.a	n.a	n.a	n.a
2008	39.6	63.6	4.2	19.2	85.3	23.0	0	0	16.0	9.7	17.0	15.0
2009	7.0	4.8	85.3	83.2	107.1	4.0	2.0	35.0	11.0	28.4	92.5	0

(mm)

Source: Based on data from Ethiopian Meteorological Agency (2011).

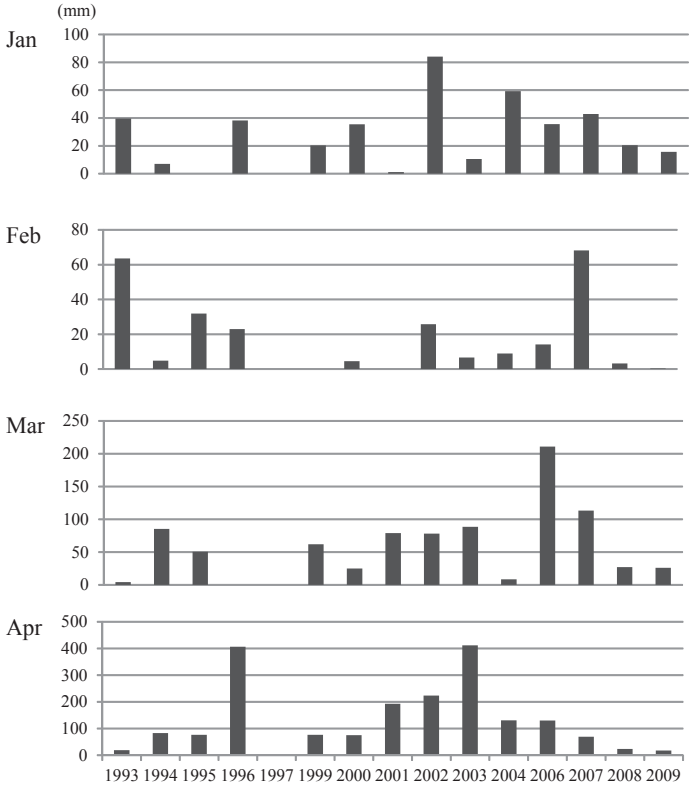

Fig. 2. Rainfall during the farming season in Turmi region.
Source: Based on data from Ethiopian Meteorological Agency (2011).

years made it difficult for people to engage in rituals to remember the dead, and to organize cattle-leaping festivities.

In contrast, the Hamer living in the highlands benefit from enough rain to support their agricultural activities. According to the PDO (2005), most areas in the district (about 26 of 35 villages[1]) do not have a definite farming season; hence, more than 23,000 people rely on the cash and food-for-work activities of a safety-net program that supports irrigation-based farming in Kara along the Omo River, as well as the development of grazing enclosures throughout the district.

Highland dwellers in Hamer are predominantly agro-pastoral. They receive more rain for crop cultivation, travel shorter distances, possess larger farm plots, use better farm implements, and have enough labor to work their farms. They cultivate pumpkins, green peppers, cabbages, sunflowers, tobacco, and maize. Fruit trees such as banana and mango are also grown in farms along the Keskie River. Lowlanders,[2] on the other hand, are predominantly pastoral and often depend on livestock and beekeeping (refer to Table 2).

> *Case: MK's perspective on Hamer high- and lowlands*
> MK, a man in his mid-40s who is originally from the lowlands, described the Hamer highlands as a suitable environment for agricultural production. The place offers people such as himself, who both keep livestock and engage in farming, a chance to produce more than people in the lowlands do. For instance, MK cultivates pumpkins, green peppers, cabbages, tobacco, sorghum, and maize. He also grows bananas and mangos and keeps chicken, goats, cattle, and bees. "They have only two seeds, sorghum and maize," he said, referring to the people in the lowlands, "but they own a large number of livestock." He attributed the highlands' superior productivity to rainfall.

LIVESTOCK MOBILITY AND SEASONS

Herd mobility in Hamer is a function of seasonal rainfall patterns. Both dry- and wet-season mobility depend on rain due to its crucial role in crop production and grass growth. The dry-season mobility pattern involves the movement of herds from village camps to herd camps. This occurs frequently in August when the dry season is at its peak, leaving trees, shrubs and grasses vulnerable to moisture stress. Similarly, herds move before the first light rains in January, since the land is not wet enough to support crop growth at that time. People who decide to use the rains remain near the village while the rest move their herd. The weak members of the herd[3] also remain in the village camps, while the rest move to grazing plains located near different herd camps within and outside Hamer territory. As droughts become increasingly severe in recent years, families move. Such dry season herd mobility destocks village camps through herd reductions. Other factors responsible for herd size reduction include *bekida*,[4] disease, slaughter, gifting during social events (such as cattle leaping and memorials for the dead), market exchanges, and exchanges for weapons.

The wet-season mobility pattern occurs following the first light rain in January, and in the wet season (February, March, and April). During this time, the Hamer move half of the calving, milking, and pregnant cows to the village camps. After the rains in January (usually in February), the plough oxen are moved to villages to till the land in farm enclosures. This wet-season migration restocks the village camps with recently calved, pregnant, and milk cows and plough oxen, as well as cattle and goats supplied under the *bekida* arrangement.

The Hamer ecological system can be best characterized as a non-equilibrated grazing system that often experiences climatic instability and erratic rainfall. Behnke (1999: 145) explored how grazing systems function in arid and semi-arid environments, arguing that African semi-arid grazing systems function on a continuum ranging from non-equilibrium to equilibrium, with most probably falling somewhere between the extremes.

The highlands, which receive relatively more (albeit seasonally fluctuating and unpredictable) rainfall, support the agro-pastoral livelihood better than do the lowlands. Indeed, rain[5] remains one of the lowlands' limiting factors. Observations and discussions with herdsmen indicated that most livestock mobility patterns depended on the rain, especially on the pastures and water that were available after the rain. In the lowlands, people start moving back to the village with part of their herd to engage in subsistence sorghum farming following the rain in January; thus, crop production and grass availability are seasonal, rain-dependent phenomena. Through its effect on pasture quality, rain in turn affects the Hamer's livestock productivity. Therefore, the mobility types and patterns of the Hamer are a function of seasons and rainfall patterns. This supports Behnke's (1999) hypothesis that annual rainfall fluctuations may have a much stronger effect on the abundance of resources available for foraging than does the number of animals. This also explains why access to herd camps scattered within and beyond Hamer grazing territories shows spatial and temporal variation.

HERD TYPES AND MOBILITY

Strecker (1976: 53–55) classified Hamer herds into domestic and camp types. He further referred to camp herds as storage or surplus herds that are kept apart from homesteads in areas with good pastureland, abundant water, and no tsetse flies. In comparison, Almagor (1978: 87–107) described stock camps as herd camps that are cared for by young herders who maintain contact with the owner (who stays in a base camp). He noted that Dassenetch cattle and small-stock camps differ in their social composition, pasture needs, and mobility; the herders in these camps are primarily young men and boys, as well as a few women and young girls who assist them when agricultural work is limited. In this way, Dassenetch camps are similar, but not identical, to Hamer livestock camps.

As in most East African herding communities, the Hamer's major herd-management systems are rotational grazing and herd splitting. However, such movements do not usually involve abandoning a specific grazing area and shifting the whole herd to a new site. Rather, the Hamer often establish livestock camps in grazing

areas that are spatially and temporally scattered across a wide range, with specific locations depending primarily on seasonal and social considerations. This paper refers to livestock in these distant livestock camps near grazing areas as "camp herds." As defined above, the camp herd is not necessarily a stable inventory or concentration of livestock (primarily cattle), as the system entails a complex pattern of mobility in and out of the camps. These movements are affected by rituals, conflicts, raids, diseases, changes in ecology and climate, institutional policies, and market considerations.

Unlike the Dassenetch, who have no permanent base camps (Almagor, 1978: 94), Hamer livestock owners may move or stay with the rest of their herd in the village, depending on herd size and season. However, during harsh seasons when grass and water are scarce, the owners often assume primary responsibility for looking after camp herds instead of merely coordinating these activities from village camps. To assist with herding efforts, families who do not have able-bodied young male herders may send young girls, as well as boys from the neighborhood. At times, the whole family may move, with the women usually returning to the original settlements to start preparing the fields when the rains come.

The locations of camp herds have changed over the last century. As a result of changes in grazing areas, attributable primarily to climatic factors and human activities, the most distant camp herd is now located beyond Mago National Park. According to my communications with old and young livestock herders and both governmental and non-governmental development agents, camp herd sites have increased in number and moved farther from the largest grazing plain in Kizo during the past century, particularly after the advent of the socialist regime.

Table 2 shows changes in distance between the village herd and herd camps, and between herd camps, as well as movement frequency from one herd camp to another, from the camp herd to the village herd, and from the village to the camp herd. It also shows the encroachment on "others' territory" during the imperial, socialist, and current regimes.

A household can establish herd camps at different sites depending on herd size, type, and composition. When moving a herd to camps, factors under consideration include accessibility to pasture, shrubs, and water, closeness to floodplains for retreat farming, and security. During the imperial and socialist regimes, the distance between herd camps was very small in the highlands, but has slightly increased during the current regime. This change is attributed to small herd size and relatively good pasture condition in the grazing plains near the villages. However, in the lowlands, this distance has increased substantially: It now takes herders 2–5 days to move from one camp to the next. Similarly, the distance from the village to the camp herds has consistently increased since the imperial regime, particularly in the lowlands; indeed, the most distant herd, which used to be reachable in a day or less, now takes 3–5 days to reach.

During the imperial regime, the frequency of movement between herd camps was negligible or very low, but has since increased in both the highlands and the lowlands. Similarly, movement from herd camps to the village herd, which used to be very infrequent, has become more frequent in the highlands. The very low mobility during the imperial regime was associated with the presence of sufficient

Table 2. Trend of events in three regimes

Mobility phenomenon D: Distance F: Frequency E: Encroachment		Environment H: Highland L: Lowland	Regimes		
			Imperial 1930–1974	Socialist 1974–1991	Current 1991–
D	Camp-Camp	H	++	++	++ ++
	Herd	L	+	++	++++ (2–5 days)
	Village-Camp	H	+	++	++
	Herd	L	++ (0.5–1 day)	+++ (1–2 days)	++++ (3–5 days)
F	Camp-Camp	H	+	++	+++
	Herd	L	++	+++	++++
	Camp-Village	H	+	++	++
	Herd	L	+ (reproduction)	++	+ (drought)
	Village-Camp	H	+	++	+++ (enclosures)
	Herd	L	++	+++	++++ (family movement)
E	Into others' territories for grazing	H	+	+	+++
		L	+	++	++++

quantities of good grazing grass, allowing cattle to stay longer at a single site. In rare cases, these cattle were moved to the village to supply milk and to have the opportunity to bond with the herd there. Movement frequency remains low in the current regime because of frequent drought; only a few cows are moved to villages to provide milk for children and the weak.

The frequency of movement from the village to the herd camps has increased in both the highlands and lowlands, from very infrequent or infrequent during the previous regimes, to very frequent in the current regime. The development of grazing enclosures in the highlands helped to contain plough oxen, milk cows, and small ruminants. However, in the lowlands, only the enclosures for plough oxen and milk cows increased, ensuring that they would be available to till the land (in the event of rainfall) and to supply milk for children and elderly individuals in the village, respectively. Otherwise, whole families tend to join the camp herds to cultivate crops after the Omo flood retreats. This move, which involves extended stays, provides extra support for herding and feeding the herdsmen in the camps, resulting in the concentration of herd camps in conservation areas such as Mago National Park.

MOBILITY AND HERD SIZE

Two sets of factors contribute to the sizes of village and camp herds: Those that increase herd size or restock camps, and those that decrease herd size or destock camps, either temporarily or permanently. Because both types of change affect village and camp herds, these factors can be classified as follows: VR-factors (factors that contribute to restocking village camp herds); VD-factors (factors that contribute to destocking village camp herds); HR-factors (factors that contribute

to restocking camp herds); and HD-factors (factors that contribute to destocking camp herds).

VR-factors include *bekida* arrangements, livestock kept on behalf of others, gifts from families and friends (*shorka* cattle and dung goats[6]), restocking through NGOs and GOs, births, and cattle obtained from raids. VD-factors include special occasions that entail slaughters during public speeches by Ayo[7] and *duki*,[8] weddings, cattle-leaping events, welcoming/bidding farewell to guests, slaughters at peacemaking/dispute settlement meetings, livestock diseases, use of livestock to purchase weapons, *bekida* arrangements (note that *bekida* can be both a VR- and VD-factor), and provisioning lodges and hotels.

HR-factors include the dry-season movement of livestock from village camps and other herd camps, cattle rejoining herds after leaping ceremonies, *hatsa*,[9] births, and cattle obtained through purchases and raids. HD-factors include cattle joining village camps on the eve of *hatsa* (temporary destocking), the return of plough-oxen to the village for farming at the beginning of the rainy season, the wet-season movement of milk cows and calves to villages, the return of pregnant herd members to the village, the loss of livestock under the *bekida* arrangement, slaughter during severe drought (rare), disease, loss to raids, provisioning hotels and tourist lodges, use as gifts, and loss to special-occasion slaughters during *osh*, *duki*, *hatsa*, weddings, ceremonies welcoming guests, and peacemaking/dispute settlement meetings.

In addition to the factors described above, village camps are temporarily destocked when livestock are moved, which usually involves travel from herd camps to the leaper's parents' house in the village on the eve of the leaping day. Livestock taken under *bekida* arrangements can also involve the destocking and restocking of herds in village camps and herd camps. Providing cattle to a non-Hamer in exchange for automatic weapons or any other product in the market may not restock herds, possibly resulting in adjusting the size of either of the two herds, as livestock may leave the local Hamer market economy permanently. However, cattle raiding may provide an opportunity for those cattle to rejoin the system.

The *mingi*[10] culture also affects herd size in both village and herd camps. For instance, if married women or engaged girls touch the nipples of sheep or cows or milk them, the animal will be removed from the herd for fear that it will bring bad fortune. This permanent destocking can in turn carry socioeconomic consequences.

Dry- and wet-season mobility is predominantly rain-dependent, significantly affecting herd size in both camps. With the exceptions of losses to raiding, disease outbreak, and drought, most of the herd is maintained during movement between village and herd camps. However, memorial rituals for the dead contribute to permanent loss of the portion of herd in village and herd camps. Cattle exchanged for weapons[11] also result in temporary loss through VD and HD if the exchange occurs within the Hamer jurisdiction; however, transactions outside this jurisdiction may result in permanent loss. The presence of a social restocking custom such as *bekida* is therefore an insurance mechanism that reduces the impact of household herd loss; however, mobility is crucial for the system to operate properly.

TYPES OF MOBILITY AND GRAZING ENCLOSURES

Figure 3, a schematic representation of livestock mobility, classifies movements into frequent-dry season, regular, and emergency. The movement of livestock between village and camp herds is regarded as regular mobility in that it occurs in all seasons and is a common form of livestock mobility.

Movement from village camps to grazing enclosures is very frequent during the dry season due to the proximity of these two sites; it is also a recent phenomenon. The herd includes weak cows, milk cows, calves, and small ruminants. The introduction of individual (I), joint (J), and communal (C) grazing enclosures has led to very frequent dry-season movement, and provides grass for herds in village camps. Individual enclosures (I) are grazing units predominantly set aside for grass production, whereas joint enclosures (J) are established and managed by two households/individuals, involving in-laws, bond friends, and wives. In contrast, ownership and management in communal enclosures (C) involve partnerships between a number of households living in one or another village. Production in I and C is restricted to grass, while food crops are rotationally grown alongside grass in J.

Camp herds are moved to grazing enclosures in emergencies, which occur during severe dry seasons and when there are too few herdsmen to take care of the herd. Movement in the reverse direction is rare unless a severely dry season

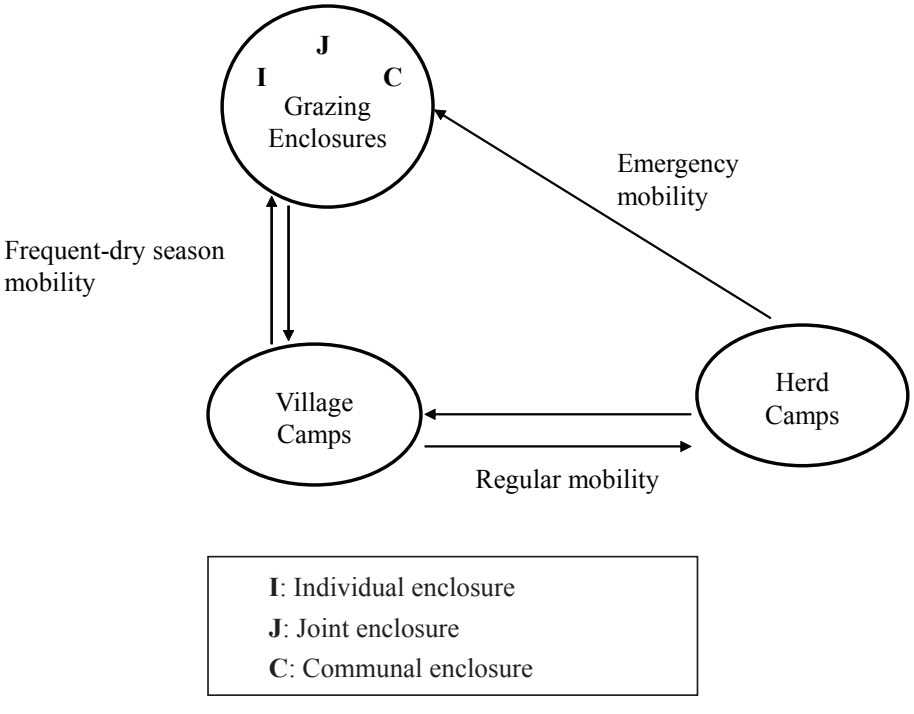

Fig. 3. Schematic representation of livestock movement.

forces entire families to move to herd camps along with the entire herd, including weak cows, small ruminants, and milk cows. Movement to herd camps also occurs in order to locate salty pastures and better grass during severely dry seasons.

As shown in Figure 3, HR- and HD-factors are associated with regular mobility, which includes movement from village to camp herds and vice versa. On the other hand, VR- and VD-factors are associated with frequent dry-season mobility, which includes the movement of livestock from village camps to grazing enclosures and vice versa. This type of movement only temporarily restocks and destocks village camps.

CONCLUSION

Irregular, insufficient, and unequally distributed rainfall during the past several decades has resulted in crop failures in Hamer territory, particularly in the lowlands. This, in turn, has pushed many of the herd camps farther away from settlements. In response to these changes, the distance from the village to camp herds has increased, and the frequency with which livestock are moved to village camps has decreased.

As rainfall and grazing land have declined over the past decade, the development of livestock enclosures has gradually gained momentum. Enclosures play an important role by intercepting mobility and providing weak, small, and lactating animals with grass, particularly during dry periods, which saves time and labor for poor families with small herds and specifically reduces the need for emergency movement. This also gives farming households more time to till their land, tend their crops, and supply milk to small children and the elderly.

However, the increased use of enclosures may promote violent confrontations triggered by multiple claims resource rights. Enclosures in the Hamer District can exist independently from grazing areas or as part of farms. Farm enclosures, which are found primarily in the highlands, provide space to cultivate crops, grow grass, and keep livestock.

Ultimately, cultural norms, rituals, and market conditions were all found to affect mobility, and diseases were found to affect herd size in livestock camps. A recent but equally important additional factor is variations in grass availability and production due to the expansion of grazing enclosures. Moreover, mobility type was primarily influenced by season and distance between camps and grazing enclosures. Investments in social facilities may result in continued changes in the Hamer District in the future.

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NOTES

(1) The smallest administrative unit in Ethiopia's governmental structure, called "*kebele*" in Amharic which is offical language of Ethiopia.
(2) Movement to agro-pastoral areas and trade interactions led to growing interest in farming and the adoption of relevant skills.
(3) Diseased and injured livestock, and newborns that are physically unable to endure travel for grass and water.
(4) A social restocking custom or cattle alliance that operates in Hamer society through bond friends. Also referred to as *bel*.
(5) Refer to Table 1 and Figure 2.
(6) Livestock collected by newlyweds from relatives.
(7) Public speaker. A public gathering to hear a speech is referred to as an *osh*.
(8) Memorial to the dead.
(9) *Hatsa* refers to the cattle-leaping ritual that symbolizes the transition into adulthood.
(10) Often associated with, but not limited to, the emergence of milk teeth in the upper jaw before the lower jaw.
(11) In 2012, six cattle could be exchanged for an AK-47 and 10–20 bullets. Since 2013, the government has begun making efforts to register arms, control movement, and regulate possession.

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