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Short communication

Assessing the role of mobile phone communication in drought-related mobility patterns of Samburu pastoralists

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ABSTRACT

For pastoral communities living in arid Northern Kenya, mobility is a primary means of managing livestock in response to climate variability and drought. Access to a diversity of drought refuge areas for livestock is important to Samburu pastoralists' herding strategies. The rapid diffusion of mobile phone technology over the last decade raises the question of whether this new means of communication has enabled pastoralists to navigate risks in new ways that alter the geography of drought-related mobility in pastoral societies. Despite rapid diffusion and widespread use over the last decade, we find that mobile phones communication up to now has not substantially influenced the changing pattern of drought-related livestock mobility. The complexity of forage assessments and lack of trust within wider social networks limited the use of mobile communication in navigating drought and other risks.

1. Introduction

For pastoral communities living in Northern Kenya, livestock mobility is an imperative of resource management in the context of climate variability and recurrent drought. Mobility patterns reflect strategies to access forage and water resources and to avoid conflict (McCarthy and Di Gregorio, 2003; Galvin, 2009; Fratkin, 1998). Movements in response to drought are often opportunistic and based on rapid assessments of forage conditions and potential security threats (Adriansen, 2005; McCabe, 2004). Such assessments rely on flows of information about social and environmental conditions over long distances among herds boys, scouts, and elder herd owners. The recent widespread adoption of mobile phone technology by pastoralists in Northern Kenya raises important questions about changes in the flows of information used to make decisions about livestock movements at the onset of drought and the implications of these changes for drought-related mobility patterns.

Recent research on mobile phone use by pastoralists demonstrates that issues of social trust may enable or limit the effective use of mobile phone communication to navigate social and environmental risks in accessing forage. Butt (2015) found that the status of forage and water resources was the most widely shared information among pastoralists using mobile phones in southern Kenya. In this study, 40% of pastoralists considered information shared by mobile phone to be generally inaccurate while 43% found that accuracy of information about the status of grazing areas shared by mobile phone varied greatly according to the source of information. Some reported deliberate use of deception to discourage other herders from bringing livestock to preferred grazing areas. In contrast, Rasmussen et al. (2015) reported a more positive assessment of mobile phone use to gather weather and forage status information among Fulbe pastoralists in Burkina Faso. This study found that two-thirds of pastoralists relied on such assessments from distant contacts delivered solely through mobile phone communication and that this was the preferred source of information to assess distant forage opportunities. Most of the remaining respondents relied on information from scouts who also provided their assessments of distant forage by mobile phone.

To date, the limited literature on mobile phone use by pastoralists has not assessed the potential for mobile phone communication to contribute to changes in mobility patterns. More rapid communication between scouts and elders might enable identification of additional viable grazing areas when time is limited (Lovell, 2011). Moreover, pastoral landscapes are increasingly fragmented by areas of private property and pastoralists

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increasingly interact with private property owners and non-pastoralists in their movements with livestock (Lesorogol, 2008; Lengoiboni et al., 2011). For example, in the context of the 2009 drought in northern Tanzania, drought related mobility required that pastoralists traverse protected areas, private and village land, and international boundaries, drawing on "remaining customary institutional frameworks while also negotiating with village government leaders, national park personnel, and private landowners in ways that required new forms of social relations, knowledge, and skills (Goldman and Riosmena, 2013: 591). While such interactions may not be entirely new, it is not yet understood whether increased access to mobile phone communication has so far enabled pastoralists to navigate these social interactions in a way that could contribute to even greater dynamism in patterns of drought-related mobility from one drought to the next.

We undertook an investigation to establish how the pattern of Samburu pastoralists' drought related livestock mobility changed over the decade during which mobile phones were widely adopted. Secondly, we examined the use of mobile phones in decision-making related to livestock movements at the onset of drought. We assessed whether the advent of mobile phone use has contributed to changes in the geography of drought refuge areas accessed by Samburu pastoralists, either as a result of changes in communication between scouts and elders or due to communication with wider social networks that would facilitate identification or access to grazing areas not used during the previous drought.

2. Methods

This paper is based on fieldwork conducted between May and July 2013 in Samburu Central District of Kenya. The research employed qualitative methods to generate qualitative data on drought-related livestock mobility among pastoralists from the Tamiyoi community located approximately 15 km from Maralal town, the district headquarters. Twenty-one community members took part in research workshops over two days. Approximately half of the participants were male elders involved in livestock mobility decision-making. The remaining participants were made up of younger men who had served as scouts or herds boys and married women. Participants were wealthier on average than the community at large, given that all resided in households that possessed livestock engaged in long distance drought-related movements. Thirteen key informants were drawn from the community, government and civil society. Home visits and community meetings served as conduits for selecting community workshop participants. Research assistants from the community assisted in selecting participants to ensure representation of different levels of livestock wealth within the community.

Field methods were designed to compare patterns of long-distance movements of livestock between the two most severe droughts in recent memory, both in meteorological terms and based on local assessments of impact (Smucker, 2012). To establish the pattern of drought related mobility in response to the 1999 and 2009 droughts, workshop participants identified the primary drought refuge areas used by pastoralists from the Tamiyoi community for each drought period. Workshop participants generated a list of grazing areas that reflect the most important drought refuges and account for nearly all livestock movements. Participants acknowledge that there may have been movements of a small number of animals to additional areas not listed. The research team either traveled to the primary drought refuge grazing areas to take GPS readings or identified them on a topographic map. From these sources, we then produced a single map that conveys the general pattern of movement from Tamiyoi during the two drought periods.

Second, workshop participants engaged in an assessment of the primary factors driving changes in the geography of drought refuge and, specifically, to assess the role of mobile phone communication among those factors. After discussing the differences in the pattern of drought refuge, broad drivers of change were discussed individually and their importance assessed relative to other drivers. Triangulation with data from key informant interviews was used to confirm the conclusions developed by participants in community workshops.

3. Changing patterns of drought related mobility

Pastoral grazing patterns reflect adaptable mobility strategies to manage livestock and forage resources. Mobility strategies encompass both regular seasonal patterns of mobility and longer-distance drought-related movements. Table 1 indicates the changes in the relative location of drought refuge areas accessed by Tamiyoi herders during the two drought periods.

A comparison of patterns of drought refuge between the major droughts of 1999 and 2009 reveals elements of stability and change between the two drought events (Fig. 1). Fewer than half the number of drought refuge grazing areas was accessed in 2009 as compared to 1999. The mean distance between Tamiyoi and all drought refuge areas was greater in 2009 as compared to 1999. Most notably, no refuge areas were accessed in 2009 that had not been previously accessed in 1999. The 2009 drought refuge areas are, therefore, a subset of a more substantial and directionally varied set of drought refuge areas accessed in 1999.

The number of drought refuge areas declined substantially between the two time periods. Most notably, grazing areas to the west in West Pokot (near Ortum) and in Turkana South districts were not utilized, nor were those to the east near the border with Isiolo (near Archer's Post). Drought refuge grazing areas to the south and north remained important in 2009, including long distance movements north toward Marsabit and south toward Laikipia. Thus, we do not find a contraction of the spatial pattern of mobility that would be indicative of a transition away from long distance movements, but rather a substantial reduction in the number of drought refuge areas accessed in 2009 as compared to 1999.

4. Mobile phone communication and other drivers of change in drought related mobility

We assessed the role of mobile phone communication and discuss these findings relative to the primary driver of change in mobility patterns identified by workshop participants and key informants: insecurity and conflict.

4.1. Mobile phone communication

More than three-quarter of community workshop participants reported mobile phone ownership within their homesteads. Workshop participants and key informants provided insight on whether high rates of mobile phone ownership among Tamiyoi community members have influenced changes in the dynamics of information sharing and resultant patterns of livestock mobility.

Table 1
Characteristics of 1999 and 2009 drought refuge grazing areas.

	1999	2009
Number of Drought Refuge Grazing Areas	17	7
Nearest Drought Refuge (km)	33	42
Most Distant Drought Refuge (km)	165	151
Mean Distance to Drought Refuge Area (km)	101	121