EXTENDED ABSTRACT FOR PAA 2014

Population and Environment: How do people access and share information that affects their wellbeing?

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Introduction. In the once-heavily-forested area of Tanzania known as Loliondo II Forest Catchment Reserve (LFCR), forest resources are being lost due to encroachment and illegal logging among other reasons. Overall, Tanzania is losing its forests at an estimated rate of 1-2% annually (MNRT, 2009). Currently, surrounding villages manage these forests jointly, but this has become increasingly challenging with extremely high (4.5%) rates of population growth. Increase in population almost implies depletion of these resources in few years to come; yet these forests are essential as water catchments for the irreplaceable ecosystems nearby, including Serengeti National Park. When villagers are asked how they will feel if the forest disappeared, most of them say, "*nimekwisha; msitu ndio kila kitu";* meaning *"that will be the end of me; the forest is everything".* In this paper, I analyze data from eight villages near Loliondo Forest with the goal of understanding how people learn about the status of forest resources. Is information transferred by word-of-mouth, in village meetings, or by cell phone calls or texts, for example? Are the sources of information gender- or age-segregated? I use qualitative data gathered between July and September, 2013, to understand how information is accessed and shared among community members surrounding the forest.

Background. In low income countries, communities close to forested areas often depend on these resources for their livelihoods. As pointed out by Pimbert and Pretty (2000); "Individually and cumulatively, wild species can contribute to the food and financial security of rural households as dietary supplements, hedges against crop failure, income-generators, medicinal plants, construction materials, fodder and fuelwood." Basnet (1992) and Hines and Eckman (1993), like many other authors assert the dependency of rural people on natural resources. Apart from the food and financial security that natural resources provide to rural people, people are also connected to their natural resources culturally (Hines & Eckman, 1993). As Basnet notes, the dependency rises mainly because rural people in developing nations are isolated from main markets, so they have minimal alternative sources of income, and barely receive health services from modern health facilities. This dependency makes it almost unthinkable for local communities to not use forest resources.

How then can these resources be sustained under such utilization pressures? This question can partly be answered by this study. If community members consistently receive forest related information from motivated "community monitors", they may take "appropriate actions" towards the forest. Information may be about ongoing forest clearing, which may stimulate community action to curtail clearing of the forests. Curbing such destructive actions may be considered "appropriate action" since it is intended to limit the destructive actions towards the forests. Other forest-related information may include, but not be limited to: environmental information intended to increase or reinforce peoples' awareness about consequence of deforestation; and information for increasing and promoting their ability to use

alternative sources of forest products. One example is introducing them to tree planting or agroforestry in cases where there is no such tradition.

Even though it can be argued that local people already take action to protect forests they rely on, evidence from individual conversations with local leaders of eight villages of Loliondo division show that there has not been consistent monitoring of forest resources by local community monitors. As a result, in a lot of cases actions to curtail such forest destructive activities have been delayed. Moreover, village leaders claim that some local community monitors who act as forest guards (normally the "Morans") are less motivated to take action by reporting forest destructive activities as they are not paid wages. As a result, some "Morans"[1] are easily bribed by illegal loggers (personal communication; summer 2013). The other question that needs to be answered is if funds were available to pay these community monitors as an incentive (a real possibility), how can these community monitors disseminate environment-related information to local people effectively? What strategies (traditional or modern) can be used to ensure that the information reaches a large population in the area? These questions will partly be answered by understanding the current means of communication employed by local people.

This study is partly funded by the European Union (EU) through Frankfurt Zoological Society (FZS), and this analysis will attempt to answer part of the big question raised by FZS; "*What is the role of community level environmental information on individual decision making in forest resources management?*" The study will be conducted in three stages: baseline research, intervention implementation, and post-intervention research. The results will be used to determine impacts of the environmental dissemination intervention on individual decision making towards forest resources management. This paper presents findings from baseline research on information dissemination. In it I aim to identify the main means and strategies employed in information transfer among mainly non-literate communities surrounding Loliondo II Forest Catchment Reserve.

Study area and its importance. The study area includes eight villages: Loliondo, Sakala, Tinaga, Enguserosambu, Naan, N'garwa, Orkiu A, and Olkiu B. All the villages are found in Loliondo division of Ngorongoro district, Northern Tanzania. Some villages border Loliondo II Forest Catchment Reserve, while others are part of the forest. The forest comprises sensitive areas, as defined by the Tanzanian Forest Act of 2002, because it harbors water catchment areas. In addition, it is a home to most rivers that run through important ecosystems - Serengeti National Park, Ngorongoro Conservation Area, and Lake Natron (See Figure 5 at the end). Moreover, this forest is also a major source of various forest products for local people in Loliondo division, including wood poles, fire wood and medicinal plants. The forest is currently owned by villages that surround it, although the ownership is not yet legalized.

Loliondo II Forest Catchment Reserve is mainly surrounded by two major tribes, the Maasai and Sonjo. The two tribes have similar cultural practices, with a few distinctions. While the economy of the Sonjo has historically depended on both agricultural and pastoral activities, the economy of the Maasai has historically mainly depended on pastoral activities (Western & Wright, 1994), until about a decade ago when they started engaging more in agricultural activities. The shift in economic activities by the Maasai can partly be attributed to climate change. For example, a drought that hit most parts of Northern

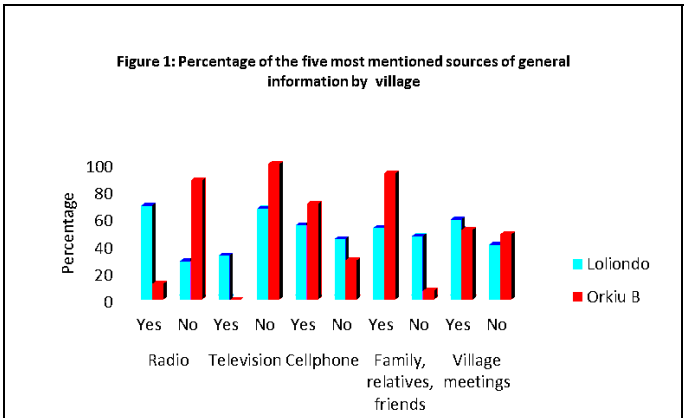
[1] In the Maasai culture, young men become "Morans" when they reach puberty age and are circumcised. "Morans" are perceived as community warriors.

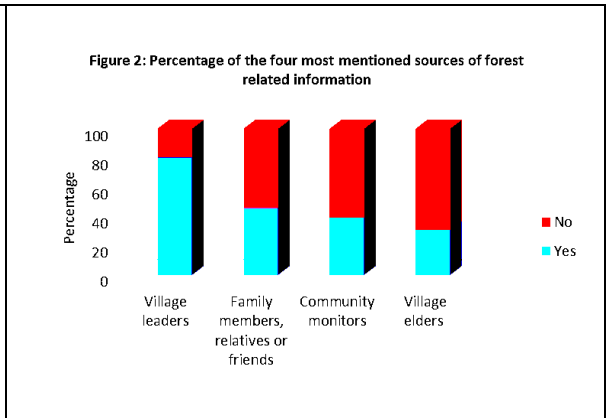
Tanzania in 2009 led to high numbers of losses of Maasai livestock in drier areas (The Whole Village Project, 2010). Overall, the population of Maasai who depend on farming has increased. This change in economic activities raises a concern for forest resources, as more forests are cleared for new farms. Moreover, as the population in the area continues to increase rapidly, both due to migration into the area and a population growth rate of about 4.5% (MPEM, 2006), more natural forests are anticipated to be cleared in the near future. Therefore, this concern calls for strategic plans to accommodate such changes in forest management strategies and need for increased support for enabling local communities to manage these forests in a more sustainable manner.

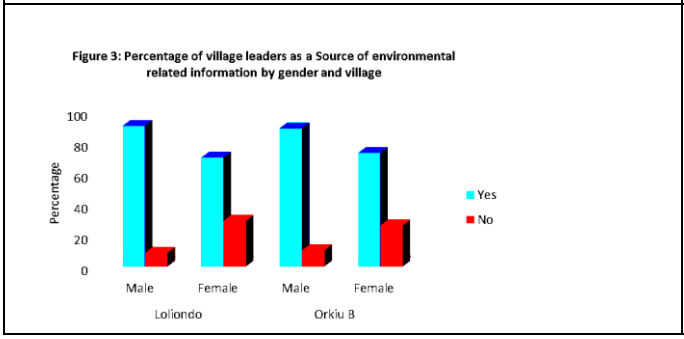
Data. Data was collected on knowledge, attitudes and practices towards Loliondo II Forest Catchment Reserve between June and September 2013 in eight villages. In addition, data on "information access and sharing", specifically, information related to Loliondo II Forest Catchment Reserve was collected during the same period. From each village, 30 households were selected randomly, and up to four individuals from selected households were interviewed. Therefore, a total of about 50-60 men and women were interviewed from each village, with the aim of maintaining a gender balance. In this abstract, data for two contrasting villages are included: Loliondo village, which is also a town center for Loliondo division, and thus more populated and urbanized; and Orkiu B village, which is less developed, less populated, and spread out. The total number of cases is 107; this will increase to about 450 when data for six more villages is included. Qualitative information obtained through in-depth interviews of "information-rich" cases (Patton, 1990) will also be used (p. 181). In this respect, "information-rich" cases included village leaders, natural resources committee members and village elders.

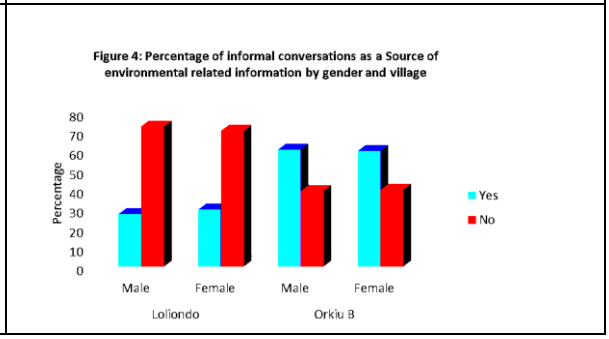
The four most mentioned sources of general and forest related information are as shown in Figures 1 and 2 below. Only sources mentioned by at least 10 persons are reported. Both villages seem to have access to similar sources of both general and forest related information; although individuals in Loliondo villages seem to have more access to radios and television compared to individuals in Orkiu B (see Figures 1 and 2). While both genders in both villages seem to access forest related information through village meetings equally, more men and women in Orkiu B seem to access forest related information through word of mouth from friends, relatives or friends compared to individuals in Loliondo (see Figures 3 and 4). For both general and environmental related information, individuals seem to rely heavily on traditional means of communication (formal village meetings and informal conversations with family members, relatives or friends). The two most mentioned sources of information, village leaders and family, relatives, or friends (as shown in Figures 1 and 2) are also mentioned as the most trusted sources of environmental information related to Loliondo II Forest Catchment Reserve (results not shown). No one mentioned written documents as a source of information in both villages, suggesting that more people are illiterate, cannot afford to pay for written documents, such sources are not available, or it is not their custom to read documents.

Methods. The analysis heavily relies on descriptive analysis because open-ended questions were used. Tables and figures presenting results concerning sources of general and environmental information will be presented by village, gender, and other characteristics. In addition, Probit regressions will be used to consider determinants of sources of environmental information mentioned: do demographic characteristics matter?









Preliminary discussion, future work, and conclusion. Preliminary results for two villages indicate that both communities seem to rely heavily on village meetings and family, relatives or friends as sources of both general and environment-related information. There are two observed differences though: more individuals in Loliondo village reported access to the radio and television compared to Orkiu B. The differences could be due to disparities in socioeconomic, available communication infrastructures, culture, and demographic characteristics. Although one might argue that more men own mobile phones compared to women, the preliminary results show that cellphone usage with respect to information access does not seem to vary between genders in both villages. This observation does not seem to contradict observations made in Kenyan rural and urban communities by Wesolowski and others (2012).

Future analysis will include data from all eight villages and more descriptive analysis of individual responses as well as analysis of in-depth responses from key informant interviews. In addition, the Probit regression model will be run to determine whether access to different sources of information varies by age or other demographic characteristics. The four dummy dependent variables that will be used include: village leaders, word of mouth (family, relatives or friends), village elders, and community monitors as sources of information (yes or no). Education is not considered in this analysis because very few people have formal education.

The purpose of this analysis is to identify the main means and strategies employed in information transfer among mainly non-literate communities surrounding Loliondo II Forest Catchment Reserve. Considering the differences in available communication infrastructures in the eight study communities, strategies employed in communicating environmental information may be quite different from one community to another. In addition, identification of information pathways will enable a better design of a future intervention that aims at efficient dissemination of environmental information.

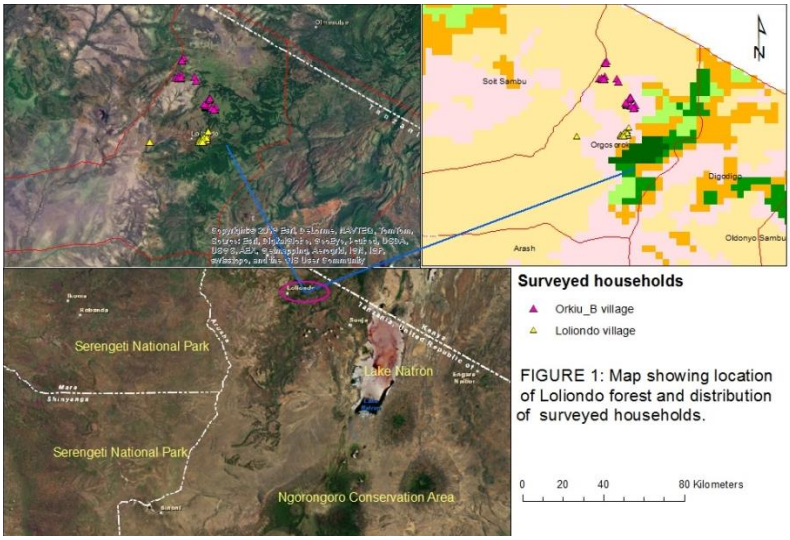


FIGURE 1: Map showing location of Loliondo forest and distribution of surveyed households.

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