

Land Use and Natal Multimammate Mouse Abundance in Lassa Fever Endemic Villages of Eastern Sierra Leone

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Abstract : Lassa fever (LF) is a severe febrile illness endemic to West Africa. While human-to-human transmission occurs, evidence suggests most LF cases originate from exposure to rodents, particularly the Natal multimammate mouse, *Mastomys natalensis*. Within West Africa, LF occurs primarily in rural communities where agriculture is the main economic activity. Seasonality of LF has also been linked to agricultural cycles, with peak incidence occurring in the dry season when fields are burned and plowed. To investigate this pattern of seasonality, four agricultural communities were selected for this two-year longitudinal study. Each community was to be sampled four times each year, but this was interrupted by the Ebola virus disease outbreak. Agricultural land use, forested, and fallow areas were identified through participatory mapping. Transects were plotted in each area and Sherman traps were set for four nights. Captured small mammals were identified, ear tagged, and released. *Mastomys natalensis* abundance was found to be highest in areas of converted fallow land and rice swamps in the dry season and upland mixed crop areas toward the onset of the rainy season. All peak times were associated with heavy perturbation of soil. All ages and genders were present during these time points. These results suggest that peak abundance of the *Mastomys natalensis* in agricultural areas coincides with peak incidence of LF reported in this region. Although contact with rodents may be higher in villages, our study suggests human behaviors in agricultural areas may increase risk of transmission of Lassa virus.

Keywords : agriculture, land use, Lassa Fever, rodent abundance

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