Lassa, an arenavirus that causes hemorrhagic illness, is endemic areas of West Africa, including Guinea, Sierra Leone, Liberia, and Nigeria. The virus is transmitted by Mastomys natalensis, the multimammate rodent, through blood and excreta. The primary strategies for preventing human cases are surveillance and rodent control. The purpose of this study was to identify household and environmental factors that influence M. natalensis infestation in homes. Six villages in eastern Sierra Leone were sampled, two during the dry season (Jan-Feb, 2009) and four during the rainy season (Jul-Aug, 2009). Rodents were trapped for four nights and data was collected on house construction, gardens, and other environmental features. Rodent burrows on the outside of the house were also documented. Data was collected from 302 households including 101 in the dry season and 201 in the rainy season. The mean number of rodent burrows per house was 3.94 (±2.2). The majority of houses were recorded as having mud and stick wall construction as well as mud floors. A total of 448 small mammals were trapped in 9,132 trap nights (overall trap success [TS]= 6.3%), including 304 M. natalensis (M. natalensis TS= 4.5%). M. natalensis were captured in 153/302 (50%) houses. Trap success was higher in the rainy season than the dry season (t=2.2, p=0.031) and the number of rodent burrows correlated with M. natalensis trap success (t=3.2, p=0.0001). Households with cats had lower levels of rodent infestation than households without cats (t=2.7, p=0.0008). The impact cats have on reducing Lassa transmission should be investigated as their promotion may be a sustainable control measure.