Population Dynamics – Session 1

Rainfall and changing population dynamics during a long-term CMR study of *Mastomys natalensis* in Tanzania

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The multimammate mouse, *Mastomys natalensis*, is a common and widely distributed rodent in agriculture and peridomestic environments in most of Africa. It is a serious pest in cereal fields and causes devastating damage during outbreak years. Earlier work in Tanzania could link these outbreaks to unusually abundant early rainfall (in October-December) leading to aseasonal breeding resulting in an additional generation within a single year, causing a tenfold increase newly recruited individuals. After this initial work in the 1980s, we have carried out capture recapture studies in a permanent 3 ha study grid in Morogoro, Tanzania, since 1994. Every fourth week (sometimes more frequent), animals have been live trapped during three consecutive days, marked individually and released. So far, this has resulted in 321 trap sessions, and with in total 64,913 captures of 28,226 individual *Mastomys natalensis*. Over these almost 25 years, population dynamics continued to show a very regular seasonal pattern with interannual variation. However, outbreaks have become very rare, the amplitude of the fluctuations has become lower and the average abundance shows a decreasing trend. Breeding remained seasonal but the breeding season is shortened. The relation between October-December rainfall and outbreaks has become less clear. The changes seems to be linked to changes in rainfall. There has indeed been a decrease in annual precipitation over the whole period although the average amount of rainfall in October-December has remained similar. Apart from the decreasing total amount of rainfall, the temporal distribution of rainfall during the wet season seems to have changed. These changes did not happen gradually but started about 15 years ago with a second non-linear change around 2012. We investigate the relation between the changes in rainfall patterns and population dynamics and what the possible consequences could be.

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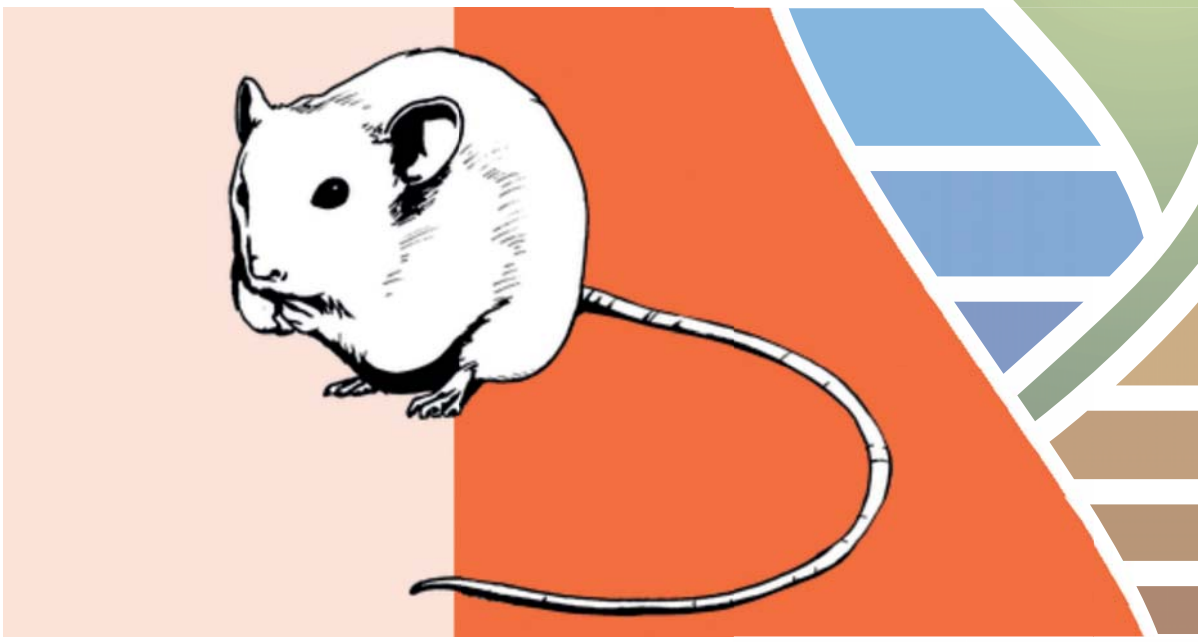

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