

Effects of fire ants (*Solenopsis sp.*) on the abundance and diversity of other epigaeic invertebrates in disturbed habitats at the Dar es Salaam bioenvironmental centre,

Tanzania

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The present study is about the effects of the invasive fire ants, *Solenopsis sp.* on the abundance and diversity of other epigaeic invertebrates at the Dar es Salaam Bioenvironmental Centre, Tanzania. The study was conducted in the disturbed and less disturbed habitats during dry and wet seasons. Pitfall traps, leaf litter siftings and baited traps were used to sample both fire ants and other epigaeic invertebrates. A total of 474,118 and 10,363 individuals of fire ants and other epigaeic invertebrates, respectively were collected. Other epigaeic invertebrates consisted of 133 morpho species, 87 families and 18 orders. Order Hymenoptera dominated at 71.4%, family Formicidae dominated at 71.1% and *Formicid sp.2* dominated at 54.2% of all the individuals collected. The abundance of fire ants was significantly higher both in the disturbed habitat ($p = 0.0004$) and during the dry season ($p < 0.0001$). Other epigaeic invertebrates were significantly more abundant in the less disturbed habitat ($p < 0.0001$) and were insignificantly higher during the wet season ($p = 0.071$). Fire ants were mostly active during evening hours while other epigaeic invertebrates were mostly active during morning hours. There was a weak negative correlation between the overall abundances of fire ants and that of other epigaeic invertebrates ($r = -0.001$, $p = 0.996$). Species richness of other epigaeic invertebrates was insignificantly higher in the less disturbed habitat than in the disturbed habitat ($\chi^2 = 0.357$, $p > 0.05$) and was significantly higher during the wet season than in the dry season ($\chi^2 = 5.211$, $p < 0.05$). The diversity of other epigaeic invertebrates was significantly higher both in the disturbed habitat than in the less disturbed habitat ($H' = 1.841$) and during the dry season than in the wet season ($H' = 1.845$), ($t = 41.321$, $p = <0.0001$). This study contributes to knowledge on how invasive fire ants may affect other epigaeic invertebrates and how fire ants are related to human disturbances; it is the first detailed study on fire ants in Africa south of the Sahara.