

Simulation of fertility control in an eruptive house mouse (*Mus domesticus*) population in south-eastern Australia

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Abstract. We simulated fertility control of house mice during and following years that populations erupt by combining time-series abundance data with estimates of survival based on capture–mark–recapture data. Analysis of seasonal rates of increase suggest that compensation to any method of control that reduces the density of mice is not expected until the winter decline—rates of increase over the annual decrease phase are density-dependent while rates of increase over the increase phase are not. Fertility control that sterilises one third of the female mice is predicted to have a large impact on the dynamics of mice such that plague densities are avoided. These results assume that the control agent operates over the whole breeding season and the presence of sterile females does not affect the reproductive output of the remaining fertile females. Nevertheless, we conclude from our simulation that achieving high sterility rates is not necessary for effective management of house mice outbreaks in Australia.