

Effects of predation and habitat structure on the population dynamics of house mice in large outdoor enclosures

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This paper examines the effect of different levels of protection from predation on feral house mice. Mice were contained in eight 50_/50 m outdoor enclosures. Enclosures allowed access to a suite of freelifving vertebrate predators from the surrounding area, including feral foxes, feral cats and Australian raptors. A 10-15% cover of small, felled cypress pine trees was added in strips to low grassland to increase habitat complexity. Mice were not protected from predation when compared with low grassland pens, possibly because predators were able to focus their hunting activity in the strips. However, when felled trees were covered with wire netting, hence providing higher quality refuge, mouse populations achieved higher densities than in low grassland pens. A predator exclusion treatment was used to confirm the refuge effect was due to a reduction in the impact of predation. Survival rates under the different treatments were generally consistent with population level responses, with mice having lower survival in low grassland pens than in high refuge pens. This is the first study with mammals that confirms the importance of refuges from predators for prey populations.