Population Dynamics – Session 2

The long-haired rat (*Rattus villosissimus*): an ecosystem disrupter in arid Australia

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Species in the genus Rattus are well-known as pests in agricultural systems. In natural ecosystems they can have strong top-down effects on vegetation through seed predation and seedling herbivory. However, the broad ecosystem impacts of population outbreaks of Rattus species are not well understood. We examined this issue for the long-haired rat (Rattus villosissimus) in a region of arid Australia with highly unpredictable rainfall. The species is the largest extant rodent in arid Australia (body mass: 150 g). The long-haired rat is not resident in the study area in the western Simpson Desert, rather population outbreaks occur every 25-30 years. We sought to describe and assess the full range of ecological interactions that occurred during a population outbreak that ran from June 2010 to December 2012. The long-haired rat outbreak resulted in a series of novel ecological interactions; these interactions had not been observed during the periods when the rat was not present. The interactions that were observed included: 1) long-haired rat predation on smaller mammals (body mass <100 q) especially other rodents; 2) invasion by the rats in to refuge habitat of the nationally vulnerable plains mouse (Pseudomys australis), and 3) feeding and associated damage to the nationally vulnerable keystone tree species Acacia peuce. In addition, long-haired rat burrow construction resulted in large volumes of soil redistribution and the presence of rats produced a spike in rodent biomass that was over twice that during irruptions where the rat was absent. The sporadic occurrence of the long-haired rat and the intensity and spatial scale of the novel interactions indicate that it can be considered a disruptive factor in the functioning of the Simpson Desert ecosystem.

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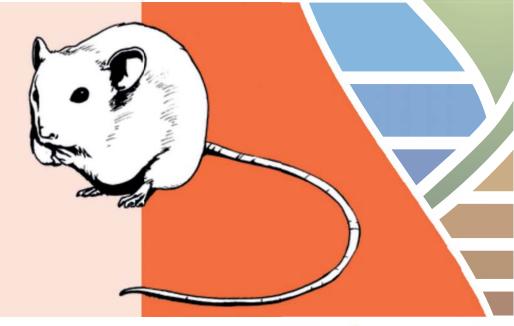
Jens Jacob, Jana Eccard (Editors)

6th International Conference of Rodent Biology and Management and

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Book of Abstracts







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