
Rodent Management – Session 1

Identification and potential uses of spatial patterns for predicting pest species outbreaks

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Rodent crop pests pose significant risks to food security not least because of complications regarding control actions, largely due to difficulties in predicting when an outbreak will occur. While it is possible, in some instances, to anticipate outbreaks given specific environmental conditions, warning signs may not appear sufficiently early to allow farmers to implement timely pre-emptive control actions given the constraints of agricultural practices. Spatial lags in the spread of outbreaks may allow the detection of the beginnings of an outbreak in a location, and provide an early warning before the rodent abundance pattern reaches a subsequent location. Research carried out on spatial patterns, such as travelling waves, is limited due to the need for extensive and exhaustive monitoring over a large area, and as a consequence the use of spatial patterns in applied ecology is limited. An extensive monitoring programme from 2011 to 2017 of *Microtus arvalis* (common vole) in northern Spain (100,000 km²) provides an ideal dataset, comprising 85,855 indices of abundance, for exploring both how a spatial pattern may inform control, but also advise on where monitoring efforts may be most effective. With this in mind, the aim of the research was (i) to determine the speed of the spatial pattern in common voles and how this varies with direction; (ii) to determine which environmental features are associated with the location of epicentres. Here we characterise the spatial pattern of common voles in a recently colonised part of their range, determine what landscape features lead to areas becoming sources of patterns, and suggest how this may provide valuable implications for the control of the pest species. In doing so we hope to be able to provide farmers with a predictive ability to prepare for an upcoming outbreak with the potential of reducing pest impacts.

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Jens Jacob, Jana Eccard (Editors)

6th International Conference of Rodent
Biology and Management
and
16th Rodens et Spatium

Potsdam, Germany, 3-7 September 2018

Book of Abstracts



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