27 Which factors drive the genetic differences of Norway rats (Rattus norvegicus) on farms?

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Norway rats (Rattus norvegicus) commonly populate farms where they are controlled because they can be reservoirs and vectors for several human and animal pathogens. Understanding the biological and ecological processes that are involved in the distribution of rats is necessary for effective management measures. This is of particular importance because Norway rats have developed genetically based resistance to anticoagulant rodenticides that are commonly used for pest control. Distribution of resistant Norway rats seems to be determined by intrinsic factors such as sociality and dispersal as well as by application of anticoagulant rodenticides. We describe the distribution of Norway rats on farms located within the resistance area of Germany. Therefore, we analysed genetic differences at population level defined by the frequency of resistance (mediated by Y139C alleles) and the kinship of more than 200 individuals. Besides rodenticide application practice, also farm and landscape structures were assessed as potential extrinsic factors. We will present preliminary results and highlight the importance of local factors determining resistant rat distribution.
Jens Jacob, Jana Eccard (Editors)

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

Potsdam, Germany, 3-7 September 2018

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