
Poster Session 1 – Population Dynamics

57 Development and evaluation of a genome-wide SNP panel for invasive ship rats (*Rattus rattus*) in New Zealand

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Single nucleotide polymorphisms (SNPs) have become the marker of choice in molecular ecology because they offer a variety of advantages over microsatellite markers in genetic studies: SNPs are highly abundant throughout the genome, allow higher throughput and are less error prone to amplification and scoring mistakes, enabling standardization across laboratories. This makes SNPs powerful markers for studying the evolutionary history of populations, demography, genetic variation and kinship. Ship rats count as the most ferocious invasive species in New Zealand, posing the biggest threat to many endemic species, especially on small near-shore islands, which are important breeding grounds for many seabird species. Previous ship rat studies in New Zealand have been carried out utilising solely mitochondrial or microsatellite markers, because currently no SNP markers are available for ship rats in public databases. In this study, a first SNP marker panel was developed for ship rats in New Zealand with the aim of utilising the SNP panel for pest management, studying the genetic structure and population dynamics of this invasive species. Upon initial discovery of ~72 million variants from paired-end sequencing reads of a single ship rat individual in reference to the *Rattus norvegicus* genome, a reductive filtering workflow allowed selection of 300 high-quality SNP markers. This SNP marker panel was subsequently tested by performing MassARRAY genotyping of 65 ship rat samples, representing a wide geographical distribution of individuals across New Zealand, to remove markers under ascertainment bias. This final verification step provided a set of informative SNPs and first results will be presented. Utilization of a SNP panel for genetic evaluation and implementation in future conservation management projects will provide another level of information, increase accuracy of population structure and invasion histories, while allowing higher throughput with lower costs.

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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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Bibliografische Information der Deutschen Nationalbibliothek

Die Deutsche Nationalbibliothek verzeichnet diese Publikation

In der Deutschen Nationalbibliografie: detaillierte bibliografische

Daten sind im Internet über <http://dnb.d-nb.de> abrufbar.

ISSN 1868-9892

ISBN 978-3-95547-059-3

DOI 10.5073/jka.2018.459.000



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