

Project Summary:
**A novel molecular-ecology approach to ascertaining
emigration/ immigration and potential disease spread in
feral pigs.**

Project Number: 3WEDP03

Project Synopsis

Feral pigs are a significant vertebrate pest to agriculture and ecosystem integrity. The potential spread of exotic diseases poses an enormous threat to Australia's economy. A lack of data on immigration/emigration, reinvasion, social contact between groups, dispersal (particularly large-scale movement), mating system and epidemiology of other zoonotic pathogens carried by pigs are major obstacles to achieving an understanding of the rate of potential exotic disease transmission.

This project utilised a new approach to understand the dynamics of feral pigs by exploiting contemporary molecular data to understand the role that feral pigs at low density could contribute to disease spread. More specifically, the project focused on;

1. Determining pig density in a semi-arid area using aerial surveys
2. Determining the cost effectiveness of aerial shooting and annual population recovery at low density(>0.1 km²)
3. Genetically determining emigration/immigration rates
4. Ascertaining demographic (sex and age), geographic (from where, through obtaining feral pig samples surrounding the shoot area), and genetic information on re-invading feral pigs
5. Ascertaining whether disease transmission could occur at low feral pig densities
6. Predicting the minimum area to be controlled in a disease outbreak and the likely costs, and
7. Determining the untested model assumptions of density and contact rate in a 'best-case-scenario' (low density, drought affected, regularly managed) area.

The principal investigator was Dr Stephen Lapidge. A number of related articles have been published including:

1. Spencer P., Hampton J., Lapidge S. et al. An assessment of the genetic diversity and structure within and among populations of wild pigs (*Sus scrofa*) from Australia and Papua New Guinea. *Journal of Genetics* 2006;85(1): 63-66
2. Spencer P., Lapidge, S., Hampton J. & J. Pluske. The sociogenetic structure of a controlled feral pig population. *Wildlife Research* 2005; 32: 297-304

3. Hampton J., Spencer P., Alpers, D. et al. Molecular techniques, wildlife management and the importance of genetic population structure and dispersal : a case study with feral pigs *J Appl Ecology* 2004; 41 (4): 735-743

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