

Kangaroos, mosquitoes and disease: persistence of Ross River virus in Australia

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Ross River virus is a mosquito transmitted zoonosis with Australian marsupials as the principle host [5]. Although humans are not believed to play an important role in virus transmission, they do suffer significant morbidity as a consequence of the virus, with approximately 5000 reported cases per year, Australia wide. Symptoms of Ross River virus include rash, fever, fatigue and joint pain that may last for several months [3].

As mosquito activity is temperature dependent, the disease cycle differs between climatic regions of Australia. In many regions, this cycle includes winter months where transmission is minimal. As the period of viremia in the host species is relatively short [3], this raises a number of issues concerning long-term persistence of the virus [1, 2]. We investigate these issues by overlaying an SEIR framework for virus transmission on simple stochastic models of the mosquito and host life cycles. In particular, we compare two classes of mosquitoes: freshwater (that over-winter as adults) and saltwater (that over-winter as desiccation-resistant eggs).

References

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