

Modeling the Role of Edge Effects on the Spread of a Zoonotic Disease

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Land conversion and the consequential habitat fragmentation has arguably been the single largest contributor to disease emergence within the past century. As the world population grows, and the needs and demands for goods and services continue to increase, so does the current necessity for habitat fragmentation – however, an unintended consequence of this process is zoonotic disease spillover to humans and domesticated species. This research seeks to establish theory about the role that habitat fragmentation has on the spread of infectious diseases via edge effects. It combines metrics in landscape ecology with theoretical epidemiological models to understand how the shape and size of a habitat fragment on a landscape affects zoonotic disease transmission. Various disease characteristics are calculated, and numerical simulations are performed to make implications for control strategies.