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SPATIAL MODELLING AND ECOLOGY OF *ECHINOCOCCUS MULTILOCULARIS* TRANSMISSION IN CENTRAL ASIA

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Transmission of *Echinococcus multilocularis* to humans occurs by accidental ingestion of eggs either indirectly through contaminated vegetation, or directly through contact with an infected canid. Our work in China, and more recently in Kazakhstan, has suggested that the most likely transmission mechanism in these regions is *via* domestic dogs which are allowed to roam freely and hunt (infected) small mammals within areas close to villages or tented pastures. This assertion has led to the hypothesis that there is a landscape control on transmission risk since the proximity of suitable habitat for susceptible small mammals appears to be key. We have tested this hypothesis in a number of endemic areas in China, notably south Gansu and Ningxia Provinces and most recently in the Tibetan region of western Sichuan Province. The fundamental landscape control is its effect at a regional scale on small mammal species assemblages (susceptible species are not ubiquitous) and, at a local scale, the spatial distributions of small mammal populations. To date we have examined relationships between landscape composition and patterns of human infection, and landscape and small mammal distributions. In current work we are examining the relationships between landscape and dog infection rates. The key tool to characterize landscape is satellite remote sensing and these data are used as inputs to drive spatial models of transmission risk. This paper reviews the progress that has been made so far in spatial modeling of the ecology of *E. multilocularis*, outlines current research issues, and describes a framework for building a spatial-temporal model of transmission risk.