Vortragstitel	**Bayesian modeling of factors potentially influencing the distribution of *Echinococcus multilocularis* in foxes**
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Zusammenfassung

Alveolar echinococcosis is considered one of the most dangerous autochthonous parasitic zoonoses in central Europe. The red fox (*Vulpes vulpes*) represents the main definitive host of *Echinococcus multilocularis* in Europe and various species of rodents are involved in its life cycle as intermediate hosts.

To investigate the potential influence of environmental factors on the spatial epidemiology of *E. multilocularis*, 38,446 foxes were sampled in two Federal States of Germany and the results of the parasitological examination linked to a geographic information system. The landscape composition per spatial unit was derived from a high-resolution land-survey vector database and supplemented by a digital elevation model. Data were analyzed using a hierarchical Bayesian model. Although advanced Markov Chain Monte Carlo (MCMC) techniques were used, the model runs were time consuming. Therefore, we applied integrated nested Laplace approximation (INLA) which might reduce computing time dramatically without increasing the error of the estimates.

On the municipality level and with environmental data at higher resolution, the study confirmed results of a previous publication, which had utilized exact locations of foxes and micro-habitat data. Furthermore, the preference of infected foxes for open landscapes with pasture was demonstrated in both regions despite the different landscape characteristics. However, prediction of endemic areas was not possible alone on the basis of land-use classes in the study areas, as the proximity of a naïve to an infected area, i.e. the probability of introduction of the parasite by neighbourhood, explained most of the variability in the spatial distribution of *E. multilocularis* in foxes.

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Komplexe Probleme – einfache Antworten?

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