Do anthropogenic disturbances of habitats promote the transmission risk for viruses?

A. Seltmann¹, M. Struebig², G. A. Czirjak¹, M. Dehnhard¹, C. Drosten³, A. Kurth⁴, T. Kingston⁵, H. Bernard⁶, C.C. Voigt¹

Background: ecological vs. physiological drivers
• Most emerging infectious diseases are of zoonotic origin (Jones et al. 2008)
• Anthropogenic land use (e.g. deforestation) may promote transmission risk of pathogens across species barriers by an increased contact zone – “ecological drivers” (Field et al. 2001; Breed et al. 2006)
• Do physiological drivers (such as health status, e.g. chronic stress) affect viral prevalence and shedding?

Study site
• Sabah, Malaysia within the SAFE project (Stability of Altered Forest Ecosystems)
• Sampling along a gradient of increasing level of anthropogenic disturbance:

selectively logged forest → currently logged forest → fragmented forest

Methods
• Study species: in total 8 species of the families Rhinolophidae, Hipposideridae and Vespertilionidae
• Assess health status and immune functions of individuals (ratio forearm length : mass, viral diseases, level of chronic stress, immunoglobulins, bacterial killing ability)