

IMPACTS OF BIODIVERSITY ON THE EMERGENCE AND TRANSMISSION OF INFECTIOUS DISEASES

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The interaction between biodiversity and health are complex. On the one hand, evidence suggests that in some multihost reservoir-disease systems, reduced biodiversity correlates with increased disease prevalence, and transmission potential to people. In-depth studies on Lyme disease in the U.S.A. in particular strongly support this correlation and suggest that anthropogenic changes to the landscape increase our risk of becoming infected. Some studies suggest that this phenomenon, broadly termed the 'Dilution Effect' applies in a number of other disease-host systems. In contrast, the risk of emergence of new zoonoses in people is directly correlated to the diversity of potential reservoir hosts in a region. This likely also holds for the risk of emergence of new livestock diseases from wildlife. Thus biodiversity represents both a positive and negative impact on human and livestock health and trade. How do we resolve these seemingly conflicting scenarios? In this talk, I will present evidence for both sides of the problem, and review the balance of impacts. I propose that caution is required before we conclude that the positive infectious disease implications of biodiversity are widespread. In order to avoid conflicts between conservation goals and the protection of health, livestock production and trade, I propose that we need to highlight two important issues: 1) that diseases emerge due to anthropogenic activity, and that without this factor, diversity is not a risk for Emerging Infectious Diseases; 2) that the positive value of diversity outweighs the risk of new disease emergence. I will use examples from a range of zoonotic and wildlife Emerging Infectious Diseases to demonstrate that these issues can be neatly framed in aesthetic and economic terms to help prevent any perceived conflicts between conservation and health.

