Abstract: The rate of species extinctions, both globally and from local communities, continues to accelerate. In recent years, ecologists have asked, to what degree will ecological communities lose their ability to provide “ecosystem services” as biodiversity is lost? This talk will describe how biodiversity loss affects the risk and incidence of zoonotic diseases (diseases transmitted from non-human vertebrates to humans). Most zoonotic pathogens can infect several wildlife host species. However, hosts differ strongly in their capacity to support population growth of the pathogen. Some hosts act as reservoirs that amplify pathogens, whereas others act as “dilution hosts” that can absorb but do not contribute pathogens. Therefore, the diversity and species composition of the host community is fundamentally important in determining pathogen transmission and disease dynamics. Reservoir hosts tend to be abundant, widespread species that are resilient to human-caused environmental degradation. In contrast, dilution hosts are often sensitive to environmental degradation, disappearing when biodiversity is lost. This presentation will describe two case studies of diseases – Lyme disease and West Nile virus encephalitis – that are exacerbated when biodiversity is reduced. These case studies show that the current biodiversity crisis is likely to increase human exposure to many infectious diseases.

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