Relationships between evolutionary and ecological factors and the prevalence of West Nile virus antibodies in birds

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The rapid expansion of West Nile virus has raised interest in the population dynamics and dispersal by wildlife of emerging infectious diseases. We analyzed different ecological and evolutionary factors related to West Nile virus antibody prevalence in 72 bird species sampled in southern Spain. Prevalence of antibodies was directly related to body mass and migratory behaviour. The greater prevalence of antibodies observed in migratory species can be explained, among other factors, by the diversity of localities involved in their life cycles or the geographic areas visited during their migrations. In larger species, their greater prevalence may be due to both longevity and/or the attraction of vectors. However, the analyses of known age individuals and recaptures of individuals in different years supports a role of body size per se (and not longevity) in explaining differences in antibody prevalences. Contrary to previous ideas, evolutionary relationships between species were unrelated to differences in the prevalence of antibodies. Our results may have important implications for the monitoring of West Nile virus circulation in the field and the identification of wildlife species most exposed to the virus.