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**Noelle West**. *Modeling the Effects of Passive Immunity in Birds for the Disease Dynamics of West Nile Virus*. Preliminary report.

West Nile Virus (WNV) is a mosquito-borne virus that circulates among birds but also affects humans. Migrating birds carry these viruses from one place to another each year. WNV has spread rapidly across the continental United States, resulting in numerous human infections and deaths. Several studies suggest that larval mosquito control measures should be taken as early as possible in a season to control the mosquito population size. Also, adult mosquito control measures are necessary to prevent the transmission of WNV from mosquitoes to birds and humans. To better understand the effective strategy for controlling the affected larvae mosquito population, we have developed a mathematical model using a system of first-order differential equations to investigate the transmission dynamics of WNV in a mosquito-bird-human community. We also incorporated vertical transmission in mosquitoes and passive immunity in birds to more accurately simulate the spread of the disease. (Received August 29, 2020)