



Idaho State
University

Mathematics
and Statistics

Colloquium

Impact of bird species diversity on the transmission of West Nile virus

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There are many compartmental models in the literature about the West Nile virus (WNV), but most of them ignore the impact of bird species diversity. In this work, we formulate a system of delay differential equations to model the transmission of WNV with an emphasis on the impact of bird species diversity. We classify birds into n species and for each species, we define a competent index $D(R_i)$ which is a function of species-specific basic reproduction number R_i . We also find the basic reproduction number R_0 for the model with n species of birds. Study shows that under certain conditions, if you split the given number of total hosts into more species, it will decrease the basic reproduction number R_0 . But if a "super-spreader" has been added to the system, it will increase the basic reproduction number for sure. This is a joint work with Prof. Juan Li and Prof. Huaiping Zhu.

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4:00 pm

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