

1023-39-365

Vlajko L. Kocic* (vkocic@xula.edu), Mathematics Department, Xavier University of Louisiana,
1 Drexel Dr., New Orleans, LA 70125. *Dynamics of a Discontinuous Discrete Model of West
Nile-Like Epidemics.*

The system of non-autonomous nonlinear difference equations models the spread of the West Nile Encephalitis. The disease is transmitted by mosquitoes to both birds and humans; mosquitoes can be infected only from birds; infected birds and infected humans can recover, while infected mosquitoes can not recover. The system of difference equations models the effects of the West Nile-Like Virus on populations of birds, humans, and mosquitoes. The model includes the effects of spraying to reduce the population of mosquitoes as a main tool for control of the epidemics. In the case when the spraying function (actually the kill rate of mosquitoes) is a step function of mosquito population size, the epidemics model becomes discontinuous and it exhibits complex dynamics. (Received September 08, 2006)