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## MOVEMENT AND DYNAMICS OF NORWAY RATS IN AN URBAN LANDSCAPE

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### Abstract

Norway rats are common urban pests that can carry and transmit several zoonotic pathogens, posing a potential health risk to humans and domestic animals. Though globally widespread, little is known about how natural and human-related changes in urban landscapes affect the population dynamics and movement of this species. As part of an interdisciplinary project investigating recovery of human and natural systems in New Orleans, Louisiana after Hurricane Katrina, we are designing a framework for modeling movement and dynamics of Norway rat populations. I will present this spatial network-flow model of movement across a landscape and describe how network structure relates to the likelihood and speed of network occupancy, and how population densities relate to network neighborhood properties. I will describe how the model can be used to explore the efficacy of rodent population control measures such as increasing sanitation and targeting populations through direct removal. I will also describe how we will use extensive data being gathered on rat demographics and genetics through a trapping census study, ground cover vegetation data, and GIS data to parameterize movement and life history features in the model, and will discuss further applications including modeling the spread of rodent-borne diseases.