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**Suzanne Lenhart\*** (slenhart@utk.edu), University of Tennessee, Department of Mathematics, Knoxville, TN 37996-1320. *Economic Modeling of Free-Roaming Cats in Knox County, TN*. Preliminary report.

Unowned free-roaming cats are a global problem due to predation on wildlife and the spread of infectious diseases. Programs such as Trap, Neuter, and Return and Trap-Euthanize have been used to control cat populations. This talk presents a data-driven bioeconomic model that weighs the benefits and costs of free-roaming cat control programs. The benefits of the control programs are illustrated by a mathematical model of the dynamics of a free-roaming cat population. The economic costs associated with possible management strategies include the costs of trapping, neutering, euthanasia, the monetary value of wildlife killed by free-roaming cats, and the value of those cats. This model includes a term for caretaker cooperation with managers which reflects caretakers actively reducing the carrying capacity of a colony, to reduce the population. (Received September 04, 2020)