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Ky Quan Tran* (kytran@wayne.edu), 656 W. Kirby, 1244 Faculty/Administration Building, Detroit, MI 48202, and **George Yin**. *Stochastic Competitive Lotka-Volterra Ecosystems under Partial Observation*.

This work is concerned with Lotka–Volterra models formulated using stochastic differential equations with regime switching represented by a continuous-time Markov chain. Different from the existing literature, the Markov chain is hidden and can only be observed in a Gaussian white noise in our work. For such partially observed problems, we use a Wonham filter to estimate the Markov chain from the observable evolution of the given process, and convert the original system to a completely observable one. We then establish the regularity, positivity, stochastic boundedness, and sample path continuity of the solution. Moreover, stochastic permanence and extinction using feedback controls are investigated. Numerical experiments are conducted to validate the theoretical findings and demonstrate how feedback controls perform in practice. (Received January 19, 2015)