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Recent Winter Bat Numbers at Mammoth Cave National Park: Pre/Post White-Nose Syndrome Arrival

Steven Thomas¹

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Abstract

Eight of 13 bat species found at Mammoth Cave National Park regularly roost in caves at some time of the year. Three species that inhabit park caves are federally listed: gray bat (*Myotis grisescens*), Indiana bat (*M. sodalis*), and northern long-eared bat (*M. septentrionalis*). Regular population monitoring of hibernating bats to determine trends in winter bat abundance has occurred in a few park caves since the early 1980s. Since 2007, biennial winter bat counts in selected park caves have included the use of digital photography. White-nose syndrome (WNS) was first confirmed in the park in early January 2013. This disease has been documented (somewhere) in seven of the eight cave-dwelling bat species that occur on the park. The fungus which causes the disease has been found on the eighth species [Rafinesque's big-eared bat (*Corynorhinus rafinesquii*)], but without confirmation of the disease. Results from five winter bat counts at three caves between 2007 and 2015 (3 counts pre-WNS, 2 counts post-WNS), showed increasing numbers for the gray bat and big brown bat (*Eptesicus fuscus*), and decreasing numbers for the little brown bat (*M. lucifugus*), the tri-colored bat (*Perimyotis subflavus*) and the Indiana bat over the 9-year period. Bat numbers for four species decreased during the brief post-WNS period (from 2013 to 2015): big brown bat (35.7% decrease), Indiana bat (39.0%), tri-colored bat (62.7%), and little brown bat (92.1%). Results from five winter bat counts at five caves used by the Rafinesque's big-eared bat between 2008 and 2016 (3 pre-WNS, 2 post-WNS), showed increasing numbers for this species over the entire 9-year period. Although the declines observed during the post-WNS period are not necessarily a direct result of WNS, these findings are similar to results reported elsewhere in the eastern United States during the first few years following arrival of the disease.