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## ARTICLE

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# *Pseudogymnoascus destructans* environmental reservoir decreases 11 years after an outbreak of white-nose syndrome

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**Abstract**

White-nose syndrome is a skin disease of bats caused by the fungus *Pseudogymnoascus destructans* (*Pd*). *Pd* has devastated populations of some bat species in North America, where environmental reservoirs of the fungus are considered a threat to the persistence of bat populations. However, long-term patterns of *Pd* environmental persistence in North American hibernacula are unknown. We swabbed hibernacula walls 11 years after the invasion of *Pd* into Maritime Canada in 2011. This is the first study to examine the persistence of *Pd* in North American hibernacula >7 years after the first documentation of *Pd* at a site. The proportion of hibernacula wall swabs with viable *Pd* decreased over time, with 40.6% of wall swabs positive ( $n = 32$ ) in 2012, 35.0% ( $n = 40$ ) in 2015, and 1.7% ( $n = 120$ ) in 2022. In early winter 2022, 41.18% ( $n = 17$ ) of bats (*Myotis lucifugus*, *M. septentrionalis*, and *Perimyotis subflavus*) were *Pd*-positive compared to 6.67% ( $n = 15$ ) in late winter, a low prevalence and the opposite pattern compared to the first 4 years after *Pd* invasion to sites. Our results suggest that *Pd* loads in the environment naturally decrease to low

