

**Assessing Cave Bat Populations in Florida:
A Summary of Preliminary Findings at Hollow Ridge Cave**

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Introduction

Caves are important roosting sites for three of the 13 resident bat species in Florida. These cave-roosting species include the tricolored bat (*Perimyotis subflavus*), southeastern myotis (*Myotis austroriparius*) and gray bat (*Myotis grisescens*). All three species are listed as Species of Greatest Conservation Need under Florida's State Wildlife Action Plan. The gray bat is also listed as endangered by the U.S. Fish and Wildlife Service, but in Florida it is known recently only from Jackson County.

The number of wintering bats is of conservation interest because of the recent emergence of white-nose syndrome (WNS), a disease caused by the fungus *Pseudogymnoascus destructans*. WNS has killed millions of bats in eastern North America over the past decade and has spread south into northern Georgia and Alabama, but not yet into Florida. WNS impacts bats most seriously during winter hibernation and tricolored bats, which hibernate longer than Florida's other cave bats, are very susceptible to WNS. The primary objective of the current research is to determine where and how many tricolored bats hibernate in Florida so that we can better assess impacts from WNS if it moves into the state and to conduct surveillance for the disease.

Methods

Study Area

We visited caves on both public and private lands in the north-central (Alachua, Citrus, Gilchrist, Levy, Marion, and Sumter counties) and northwest (Jackson and Washington counties) karst regions of Florida. We surveyed Hollow Ridge Cave as part of this larger project.

Cave Survey Methods

From 2014-2018, FWC biologists visited potential bat caves in Florida from January through March to determine which caves had bats present in winter. During each cave visit, at least two biologists counted roosting bats to determine the number of individuals by species. During surveys, we limited disturbance to bats by using only red or UV lights, minimizing noise, and limiting the time spent inside each cave. Decontamination protocols, such as wearing disposable overalls and disinfecting boots, were followed to minimize the risk of the biologists transferring *P. destructans* fungal spores to bats or caves.

A small, matchbook-size data logger that records ambient temperature at one-hour intervals was placed in Hollow Ridge cave, as well as several other important roost caves, and is maintained annually during the study. One data logger was placed near the main tricolored bat roosting area in the winter of 2015. The data logger was removed from the cave during this year's survey.

Preliminary Results

We surveyed Hollow Ridge Cave on 21 February 2018 and located both southeastern myotis and tricolored bats. Hollow Ridge contained 7 tricolored bats and 2 southeastern myotis. Although relatively few bats were found this year, variation in the number of hibernating

individuals is not unusual for the tricolored bat, and Hollow Ridge Cave still should be considered an important wintering site for this species based in larger numbers in previous years.

Cave temperatures at Hollow Ridge fluctuated only a few degrees and, as expected, were warmest in late summer (Fig. 1). The average annual temperature of Hollow Ridge was 17.42 (± 2.21) °C. The minimum temperature was 12.21 °C and the maximum temperature was 20.52 °C. Our data show that throughout much of the year the cave has temperatures that are suitable for the growth of the fungus that causes WNS (i.e., 7-19 °C). Therefore, it is important to minimize the potential for human transfer of the fungus by prohibiting any caving gear and clothing used outside Florida in Hollow Ridge Cave, unless it has been properly decontaminated.

Figure 1. Temperature data at Hollow Ridge Cave, Florida from 7 February 2017 – 21 February 2018.

