

**SECOND RECORD OF A NATURAL FLORIDA
BONNETED BAT (*Eumops floridanus*) ROOST
IN A LONGLEAF PINE (*Pinus palustris*)**

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Florida bonneted bats (*Eumops floridanus*), formerly known as Wagner's mastiff bat (*Eumops glaucinus*), are arguably one of the rarest mammals in North America. Their population size is unknown, but is estimated to be fewer than 250 adults (Timm and Arroyo-Cabrales 2008). In October 2013, the species was listed as federally Endangered (USFWS 2013).

This species has an extremely limited range, with known occurrences limited to Charlotte, Collier, Lee, Miami-Dade, Monroe, Okeechobee, and – most recently – Polk counties (USFWS 2013). It was previously believed that the Florida bonneted bat (hereafter called the bonneted bat) existed only in the state's southernmost counties. However, the discovery of individuals along the Kissimmee River in 2008 during a range-wide survey established a new northern limit approximately 50 mi north of the one previously demonstrated (Marks and Marks 2008).

The Avon Park Air Force Range (APAFR) is a 106,000 ac active military base located in Polk and Highlands counties where long-term monitoring and habitat management of several Threatened species – including Red-cockaded Woodpeckers (RCW) (*Picoides borealis*) – occurs. RCWs excavate cavities in living, old-growth pine trees infected with heart-rot fungus (*Phellinus pinii*) (e.g., Conner et al. 2001), and the excavation of each cavity may take up to several years to complete (e.g., Harding 1997).

During a routine census of RCW cavities on 21 August 2013 using a pole-mounted camera system, we (GT) discovered several bats roosting in the bottom of a natural RCW cavity. The cavity was 7.1 m high in a 32.8 cm dbh old-growth longleaf pine tree with a slightly enlarged (5–7 cm) entrance diameter. The cavity excavation was completed in 2009 and was used by RCWs as a roost in 2009 and 2012, suggesting that it had been a bat roost for less than one year at the time when bats were first noticed. Additional measurements of the cavity can be taken when and if the bats vacate the roost, to minimize disturbance.

The roost tree was located in a patch of scrubby flatwoods, characterized by an open canopy of widely spaced longleaf pine trees and a low, shrubby understory interspersed with small openings of barren sand (FNAI 2010) (Fig. 1). The main oak species present included



Figure 1. Habitat surrounding Florida bonneted bat roost in a longleaf pine tree cavity (middle) excavated by Red-cockaded Woodpeckers at the Avon Park Air Force Range, Polk County.

dwarf live oak (*Quercus minima*), sand live oak (*Q. geminata*), scrub oak (*Q. inopina*), and Chapman's oak (*Q. chapmanii*). The oaks were sparse and ranged between approximately 0.3-2.1 m tall. Dominant plant species also present included a moderate cover of saw palmetto (*Serenoa repens*), fetterbush (*Lyonia lucida*), rusty staggerbush (*L. ferruginea*), Atlantic St. John's-wort (*Hypericum tenuifolium*), wiregrass (*Aristida stricta*), and bottlebrush threeawn (*A. spiciformis*). The roost tree was located approximately 1.1 km from the nearest permanent wetland, and bordered on a North Florida slash pine (*P. elliottii* var. *densa*) plantation.

A concurrent survey of bonneted bats by USFWS taking place at APAFR (USFWS 2014) resulted in echolocation recordings being taken of the bats in flight. Using an ultrasonic recorder device, the individuals were confirmed as bonneted bats. Upon conducting an emergence survey on 15 October 2014, we counted 16 bats leaving the roost at dusk and took videos of an additional four adults and at least two juvenile bats in the cavity space above the entrance (a total of ≥ 22 bats). Due to red-heart fungus infecting the tree, the cavity space was extensive. Based upon limited data from other colonies (Belwood

1992), it is possible that this group is a harem comprised of one male and multiple females.

This is only the second recorded natural roost of this species in a pine tree, the first being a group of eight adults discovered roosting in a longleaf pine RCW cavity 4.6 m high near Punta Gorda (Charlotte County) in 1979 (Belwood 1981). Other natural roost sites of the bonneted bat have included the spaces between royal palm fronds (*Roystonea regia*) (Belwood 1981) and limestone outcroppings (Timm and Genoways 2004). The roost at Avon Park Air Force Range is the only known natural roost in current usage; the remaining three known active colonies utilize artificial structures such as bat houses and the space under roof tiles (Myers 2015). This is the first roost to be discovered in Polk County and contains the first confirmed evidence of bonneted bats breeding north of Charlotte County (Jennifer Myers, pers. comm.). Very little is known of the life history of the bonneted bat, making management of this critically imperiled species difficult. Loss of habitat and natural roost sites is a threat to the population (FWC 2014), and although the number of individuals at APAFR is likely small (USFWS 2014), natural RCW cavities may be an important source of roost sites. By excavating cavities in live pines in a community where fires and storms make standing dead trees scarce, RCWs are considered a keystone species in this ecosystem (Blanc and Walters 2008). Through the continuation of managing longleaf pine habitat for RCWs, we may in turn be maintaining habitat for the endangered Florida bonneted bat.

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