

# House Wren Breeding Status in the Sandhills of Moore County, North Carolina: Has the Range Expansion Persisted?

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The House Wren's (*Troglodytes aedon*) breeding range expanded to Southern Pines-Pinehurst, the largest micropolitan area in the Sandhills of Moore County, North Carolina (U.S. Census Bureau 2018), in the late 2000s. Two singing males were present in 2008, and in 2009 approximately 20 territories were occupied by singing males, although the number of males that were paired and breeding was undetermined (Southern 2009). Nonetheless, nest sites were confirmed in both years (Southern 2009). Subsequently, this local breeding population in the Southern Pines-Pinehurst micropolitan area has declined (S. Campbell, pers. comm.). Only single males without proof of breeding have been reported at three towns (Aberdeen, Southern Pines, Whispering Pines) within the last two years (2017-2018; eBird: McNair, pers. exam.).

Only one House Wren has been detected in Moore County and two adjacent areas of the Sandhills on any of three BBS routes since the 1990s (Lake Surf in 2012; Sauer et al. 2017), which are primarily located in rural habitats. House Wrens have only attempted to breed at one rural site in this section of south-central NC, of two incomplete nests in boxes at a managed mature Longleaf Pine (*Pinus palustris*) forest (Calloway Forest) in 2017 (Stanback, unpubl. data), near the Southern Pines-Pinehurst area. Thus, confirmed nest records of House Wrens in the Sandhills of Moore County have been confined to urban habitats, including the "core area" of Pinehurst (Southern 2009).

About 25 years earlier, House Wrens were first noted breeding in Fayetteville, the largest metropolitan area (U.S. Census Bureau 2018) at the boundary of the Sandhills subregion of the Coastal Plain with the upper Coastal Plain of NC in the early 1980s when at least two pairs had become established. Fledged young were first recorded in this area in 1985 (LeGrand 1981, 1982, 1983a,b; 1984, 1986). The urban breeding populations of House Wrens in Southern Pines-Pinehurst and Fayetteville, both at the edge of their current range in the upper Coastal Plain (see LeGrand et al. 2018), probably both arrived from a northeasterly direction where urban populations were first documented in Raleigh over 90 years ago (Pearson 1934, Hader 1969; McNair, submitted ms).

Local, marginal populations at the edge of their breeding range are subject to wide fluctuations in annual abundance. The purpose of this note is to examine whether breeding House Wrens have persisted in urban habitats of the Southern Pines-Pinehurst area since they initially arrived in 2008-2009.

## Methods

We sampled the breeding population size of House Wrens at golf courses in Pinehurst (population 15,945; U.S. Census Bureau 2018), Moore County. From 2013-2014, Stanback established 160 nest boxes at five golf courses (Pinehurst Nos. 6, 8, and 9; Country Club of North Carolina Cardinal and Dogwood courses, hereafter CCNC) in Pinehurst Moore County, primarily for the purpose of studying cavity competition between Brown-headed Nuthatches (*Sitta pusilla*) and Carolina Chickadees (*Poecile carolinensis*). The nest boxes, both tree- and pole-mounted without predator guards, have 26-mm entrance holes (and are thus unavailable to Eastern Bluebirds [*Sialia sialis*]). House Wrens breed well into the summer, whereas Brown-headed Nuthatches and Carolina Chickadees do not. Four of five of these golf courses are embedded within residential subdivisions, whereas the fifth course (Pinehurst No. 8) is not. Stanback found that House Wrens built a total of one complete nest in these boxes each year from 2014-2016 at two of these golf courses (CCNC-Cardinal course, Pinehurst No. 6) after Brown-headed Nuthatches had finished breeding. In 2018, we inspected these 160 nest boxes for evidence of House Wrens breeding three times, once each in April, May, and June of 2018, respectively. McNair returned to Pinehurst from 28-30 October 2018 to re-examine nest box contents for any additional breeding evidence that may have occurred after mid-June. McNair could determine whether the nest was built by a female, and not by an unpaired male, by the presence of a distinct and lined nest cup, which is constructed solely by the female (Alworth and Schieber 2000, Johnson 2014, Kennedy and White 1992).

## Results

In 2018, House Wrens were absent at the one golf course (Pinehurst No. 8) not embedded within a residential subdivision, but were present at three of the other four golf courses (Pinehurst No. 9, CCNC Cardinal and Dogwood courses). They used a total of six nest boxes (four at Pinehurst No. 9) from 17-30 April through 8-19 June and afterwards (based on the inspection in late October). Three nest boxes contained active nests: (1) 18 May, nest with six eggs; (2) another had a lined cup but was empty on 12 June, with 5 adult feathers in box, suggesting predation; and (3) another nest had been built after the nest box had been emptied of all contents on 12 June which contained one addled egg and a skeletonized carcass of an adult). The other three boxes contained incomplete House Wren nests, probably built by unpaired males. All nests were built on top of Brown-headed Nuthatch nests after the latter's young had fledged or on incomplete nuthatch nests after they ceased using the boxes for other reasons. Thus, in 2018, a total of 6% of available nest boxes (6/106) were used in some capacity by House Wrens at these three golf courses (or 4%, 6/160, at all five golf courses). In addition, an estimated total of five singing males were present on different territories away from the above nest boxes at these same three golf courses. Thus, an estimated total of eleven territorial male House Wrens were present at these three golf courses in Pinehurst during 2018.

## Discussion

House Wrens have persisted to breed in their "core area" of Pinehurst, NC where a firm population estimate is now available for these five golf courses. This local

population has not collapsed, but we lack a population estimate for the entire Southern Pines-Pinehurst micropolitan area where the population may have declined because we did not monitor other urban habitats. The Sandhills of Moore County has had a unique concentration of resident naturalists, birdwatchers, and ornithologists in this section of south-central North Carolina for over a century (Brimley 1939; LeGrand 1975, 2018), including the current period which has more skilled observers than ever before. Consequently, this group could establish a community-based project to monitor scarce, local breeding populations of the House Wren (and other species such as the Blue-headed Vireo [*Vireo solitarius*]) every five years to document their persistence and determine the extent of their confirmed breeding distribution in the Sandhills of Moore County.

### Acknowledgments

We thank S. Campbell for sharing information.

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