On 12 July, a singing male Swainson's Warbler previously located by volunteer Rhonda Rothrock of the Shawnee Audubon Society, was relocated in the SNF in Jackson County. Initially observed singing at a height of 5m in a tree adjacent to a large canebrake, the male moved into the canebrake after 5 minutes of unobstructed observation. Based on specific areas where the male repeatedly sang, we focused nest searching efforts in two areas within the canebrake. After about three hours of searching, we found a fairly bulky nest woven into center branches next to a cane stem 1m above ground (see photo). This inactive nest closely resembles the structure, size and location of a Swainson's Warbler nest (T. J. Benson pers. comm.). Shortly after we located the nest, the male flew directly over the nest and began singing rapidly. After following the male for another hour, we failed to detect additional potential nests or female Swainson's Warblers.

Upon returning to the probable Swainson's Warbler nest on 27 July, eggs or any new signs of activity at the nest were not detected. The male was singing about 150 m from this location and immediately responded to playback. The male responded to broadcasted call notes by chipping rapidly from the ground within 5m. This interaction attracted a family of Hooded Warblers (Wilsonia citrina) and a second Swainson's Warbler that also chipped loudly nearby. No intraspecific aggressive interactions were observed as the two Swainson's Warblers appeared to cooperatively chip near the playback. While the two birds chipped from the ground or low perches we were unable to identify any distinctive differences in appearance. After two minutes the birds dispersed in the same direction. Although the male continued to sing for the next hour, we were unable to relocate the second Swainson's Warbler or any other signs of breeding activity in the area.

Discussion

During this study only two male and one probable female Swainson's Warblers were detected in southern Illinois. Repeated observations and behavior suggest these individuals were actively defending territories throughout the summer and were not transients. Although we were unable to confirm breeding in either occupied habitat patch, the behavior, presence of a Swainson's Warbler pair and potential nest strongly suggests a breeding attempt in the SNF. A lack of intraspecific aggression or differential appearance between the Swainson's Warbler pair suggests the second (non-singing) individual was probably a female, however, by late July the possibility of a recently molted hatch-year bird or another male cannot be ruled out.

Swainson's Warblers continue to occur rarely (e.g., 1.7% of total patches surveyed in this study) in appropriate habitat and at very low densities in southern Illinois. Due to the elusive habits of this species and large home-range size (range 1.55 to 30.75 ha, mean = 9.38 ha) (Anich et al. 2009), some birds may not have responded to playback resulting in a significant bias. In 1992, however, similar survey methods used in southern Missouri, one of the nearest extant populations to Illinois, reported 29% of canebrakes were occupied by Swainson's Warblers (Thomas et al. 1996).

Why Swainson's Warblers are now exceedingly rare along the northern periphery of their historical breeding range remains unclear. Major factors potentially influencing the Swainson's Warbler population decline in southern Illinois include habitat loss and the negative effects of brood parasitism by the Brown-headed Cowbird (Molothrus ater). The habitat structure that once supported a Swainson's Warbler population in the 1970's has likely changed over time. Loss of suitable canebrakes in the Shawnee National Forest may have influenced Swainson's Warbler habitat selection decisions, therefore causing dispersal of some individuals. Habitat fragmentation in the Shawnee National Forest also increases the chance of brood parasitism by Brown-headed Cowbirds (Hoover et al. 2006). With low fledging success, 0.6 warbler offspring fledged when simultaneously raising a cowbird (Benson et al. 2010), the Swainson's Warbler population may have been dramatically affected by brood parasitism. Historically at low densities, Swainson's Warblers in Illinois may not be able to cope with the multiple effects of habitat alteration and cowbird parasitism.

Naturally ephemeral, canebrake habitat tends to wink in and out of existence over the course of several years or even decades as the forest canopy becomes more or less open. The canebrake where the pair of birds and nest were observed was particularly well-developed and was larger in area, greater in stem density, and taller than nearly all of the other canebrakes surveyed. A growing interest in managing for or promoting canebrakes in bottomland forests in southern Illinois will undoubtedly improve the chances of having several breeding pairs of Swainson's Warblers in Illinois in the future. The presence of these few territorial males provides some hope that if canebrakes increase in number and size in southern Illinois, then Swainson's Warbler numbers may increase. Moving forward we will continue to survey canebrakes each summer in an effort to better document the number of Swainson's Warblers on breeding territories each year and whether particular canebrakes are occupied across several consecutive years. This information will be important to the development and implementation of canebrake management and enhancement activities.