

One of the authors, Allyson K. Jackson, holds an Eastern bluebird fledgling.

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help them for several weeks after leaving the nest, but then the fledglings are on their own (Gowaty and Plissner 1998). The fledgling period is not well documented, because they are secretive and have a low survival rate, and nothing was known about the fledgling period of birds on golf courses.

Comprehensive studies on fledgling movements have been lacking in the literature, as it has been nearly impossible to follow these cryptic birds, which have no fixed home range or territories. With the invention of radio transmitters that can be safely carried by small songbirds, fledgling studies have increased dramatically in the last five to 10 years (Brown and Roth 2004; Cohen and Lindell 2004; Yackel-Adams et al. 2006; Berkeley et al. 2007; Suedkamp Wells et al. 2008; Rush and Stutchbury 2008; Whittaker and Marzluff 2009, Moore et al. 2010). Through these studies, ornithologists have gleaned much new information about the habitat requirements of fledglings. Many studies have demonstrated that fledglings require different habitat than their parents, as they need more cover to hide from predators and food that's easy to find (King et al. 2006). This means that for baby birds to survive, they need to have multiple habitat types

in close proximity — first the nesting habitat used by the parents and then nearby fledgling habitat that they can use once they leave the nest. Fledglings that must travel further to get to suitable fledgling habitat are more likely to encounter dangerous circumstances than those that don't have to move very far.

Few studies attempt to estimate fledgling home range size, as it is complicated to analyze in fledglings because they usually don't set up or defend a territory. However, home-range analysis can be extremely useful in understanding how the fledglings use their space. The objectives of this study were to document the movement of eastern bluebird fledglings from the time that they fledged from the nest to approximately 40 days later. We will test whether home-range size differed between golf course and reference sites. If the habitat on golf courses isn't sufficient to support the fledglings' needs, we would predict larger home ranges.

Methods and study sites

We monitored eastern bluebird nests on three golf course and four reference sites in Williamsburg, Va. Golf courses were both public and private, and typical of the style found in Virginia. The reference sites included a wooded state park, two city parks and