

## Conservation Physiology of Illinois Shrub-nesting Birds—The Role of Urban and Suburban Parks

Loren Merrill, Ph.D. Illinois Natural History Survey, University of Illinois Urbana-Champaign

It's 7:35am on a warm June morning this past summer and I am crawling under an immense honeysuckle thicket at the UIUC Pollinarium property in search of my quarry—nesting birds. Specifically, I am after active nests from a handful of local species that breed in shrublands, including the American Robin, Gray Catbird, Brown Thrasher, Northern Cardinal, Eastern Towhee, and Field Sparrow. It may be surprising to hear, but native shrubland habitats are uncommon and understudied in Illinois, and a number of species that utilize them (including three of my focal species) are declining.

As part of a larger project examining the impact of nest-site selection along a habitat urbanization gradient, I chose the Pollinarium property as an example of shrub habitat in a heavily modified landscape. I am interested in the lethal and sub-lethal consequences of nest-site selection for my focal bird species, and as part of this study I'm trying to elucidate why some of these shrub-nesting species are doing well in Illinois (e.g., American Robin, Northern Cardinal, and Gray Catbird), while others (Brown Thrasher, Eastern Towhee, and Field Sparrow) are declining. My postdoctoral advisor, T.J. Benson, and one of his graduate students, Scott Chiavacci, have collected high resolution data on nest survival for these six bird species at approximately 10 sites in Illinois, providing us with information on how likely a nest is to survive based on its location at different sites along an urbanization gradient. To complement these data, I want to know how the location of the nest impacts the condition and development of the chicks that are not eaten by nest predators.

To do this, we had two teams of researchers performing different tasks. One team was primarily focused on finding nests, and checking on the status of the nests every three days to track the progress and whether it had been depredated. Once chicks were 6-8 days old at a given nest, the other team, comprised of four veterinary students from UIUC, would arrive to collect data from the chicks and the adults. Chicks were weighed, measured, given a metal band with a unique numerical code, and a small blood sample and fecal sample were collected. For the adults, we performed the same tasks as well as assessing ectoparasites. These samples provide us with information on the quality of the birds' diet, what types of parasites (if any) they are harboring, the levels of oxidative, physiological, and social stress they are experiencing, and how good their immune systems are. Together this information helps us create a complete picture of the birds' condition, and how this relates to the location of their nest site.

We have one more year of data collection ahead of us, but this past field season we collected data from 16 nests, totaling 72 individuals. We are currently in the process of running half a dozen different assays for all our field samples, and this will likely take until early April. Through this work, we hope to have a much better understanding of the role urban and suburban parks play in the long-term health of different avian populations, and this information can potentially help inform good management practices of these properties. Beginning in late April

next spring, I'll be back at the Pollinatarium, squeezing through viney tangles, peering into brush thickets, and scouring the property for evidence of my birds.