

2009 ASM Graduate Research Scholarship Summary Report

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This past summer, I completed my first season in the field working with Red-bellied Woodpeckers. One of Missouri's common backyard birds, the Red-bellied Woodpecker occupies all but the smallest of woodlands. Yet even for this generalist species, not all habitat is created equal. My Master's thesis focuses on how the shape and quantity of habitat patches can influence the natal dispersal movements of birds. Natal dispersal occurs when young birds leave their parents' territories and strike out to find a breeding territory of their own. Specifically, I am interested in how linear strips of forest, or forest corridors, may facilitate dispersal movement as birds venture out into the surrounding landscape. When conservation managers design wildlife reserves, they often incorporate forested corridors to connect larger forest patches. Although it has been shown that mammals often benefit from these corridors, no studies have investigated whether birds use these features during a natural dispersal event.

My project also investigates the strategies young birds use when they begin to search for a territory of their own. Traditionally, it has been assumed that juvenile birds will leave their natal territory after they are no longer dependent upon their parents and immediately start searching the surrounding area for a home. This strategy has been named *depart-and-search*. However, a *stay-and-foray* strategy has also been documented in studies of other woodpeckers. They found young birds making several trips out into the adjacent areas, with nightly returns to the natal territory before they made a final dispersal. Only after repeating this search strategy many times did the young birds actually disperse to a location where they set up to breed on their own. This strategy is thought to allow the birds to gather information about the surrounding landscape while retaining the benefits of parental care.

My fieldwork began in April 2009. The first season was very successful, providing supportive data for my proposed objectives. Research plots were identified in Boone and

Callaway counties at the Baskett Wildlife Research and Education Area, and Mark Twain National Forest. We located and monitored the success of 20 Red-bellied Woodpecker nests and tagged 16 birds with small radiotelemetry transmitters that allowed us to relocate each individual. From these fledglings, we obtained 60 hours of behavioral observations and over 340 individual locations. We discovered that birds exclusively used a *stay-and-foray* search strategy and we were able to track juvenile woodpeckers on 17 search forays away from the natal territory. Birds moved quickly and directly into the surrounding landscape with a mean foray distance of 0.9 km and a duration range of 54-150 minutes before returning to the natal territory. Juveniles also tended to follow forested corridors when moving through fragmented agricultural and forested habitats, which emphasizes the potential importance of habitat connectivity to dispersing juvenile resident birds.

The time we spent with the young woodpeckers also allowed us to learn a great deal about the juvenile life stage and social interactions of this common Missouri resident. Parents demonstrated brood-splitting within three days of fledging, with each parent taking over sole care of specific fledglings. After the brood was divided, fledglings were only fed by one parent. When juveniles begged from the non-caretaking parent, the parent responded aggressively. While there is circumstantial evidence in the literature indicating that brood-splitting might characterize this species, it was exciting to gain first-hand observations of these interactions.

This project has not only allowed me to design and execute conservation-oriented research, but has also provided research opportunities for undergraduate interns exploring the field of ornithology. Alicia Burke, a 2009 intern, simultaneously investigated nest survival of our population of woodpeckers and found a significant relationship between nest height and nest predation. She and I had the opportunity to present our findings from the 2009 season at the Cooper Ornithological Society/ American Ornithologists' Union/ Society of Canadian Ornithologists 2010 Joint Meeting in San Diego.

I attribute success of the 2009 field season to hard-working technicians; enthusiastic volunteers; support and guidance from my advisor, Dylan Kesler; and generous funding from the Audubon Society of Missouri. The Graduate Research Scholarship provided all of the supplies needed for the 2009 season including banding equipment, birdcall playback units, tree climbing gear for nest access, nest camera components, and telemetry devices. This equipment will be invaluable to this project and to future projects conducted by our Avian Conservation Lab at the University of Missouri.

This summer I will complete another field season to strengthen data obtained in 2009. I hope to gather movement information on 20 additional birds across a larger gradient of landscape fragmentation in order to further quantify land use and gap avoidance in dispersing woodpeckers. I look forward to publishing the results of this study in 2011 to provide information to land managers interested in maintaining connected populations of resident birds. I sincerely thank the Audubon Society of Missouri for their financial support and for their continued commitment to helping local bird communities. Interested readers can see pictures from the 2009 season at <http://picasaweb.google.com/allison.s.cox/RBWO>.